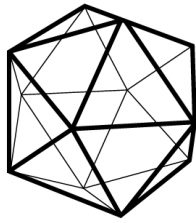


Thematic Areas

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CYENS
CENTRE OF EXCELLENCE

MRG: BIO-SCENT

Thematic Area: Computer Vision, Machine Learning

Short Description: Development of novel computer vision techniques driven by the need to improve the quality of life of humans. Research will focus on developing first person Computer Vision systems that aim to improve personal safety while allowing humans to work more efficiently and adapt in a better way to their environment. Examples of topics considered include, but are not limited to, obstacle detection for improving pedestrian safety, use of wearable cameras in cultural heritage sites, use of wearable cameras for enhancing the learning experience, and use of use of wearable cameras in medical applications. The topics will be addressed through research and development in the areas of computer vision, machine/deep learning and their combination with emerging technologies such as mobile computing, ubiquitous computing, virtual and mixed reality.

Candidates for this post should possess:

1. Postgraduate Degree of Master's level from accredited Universities in Computer Science or Multimedia or Electronic Engineering or any related field.
2. Excellent computer programming skills.
3. Ability to organize and carry out research work independently.
4. Very good knowledge of English language.

Preferred qualifications include:

Prior experience in research activities (i.e., publication record, submitting research proposals, participating in research programs) and experience using computer vision libraries (i.e. OpenCV) and deep learning libraries (i.e. TensorFlow) will be considered as an additional qualification.

Responsible MRG:

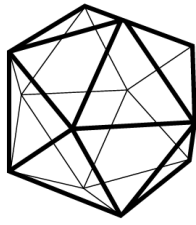
The successful candidates will be assigned to CYENS's Biometrics for Smart Human-centred Emerging Technologies (BIO-SCENT) multidisciplinary research group. The successful candidate will be registered at the Cyprus University of Technology but will be based at CYENS.

For more information please contact:

Professor Andreas Lanitis, Team Leader of BIO-SCENT MRG, andreas.lanitis@cut.ac.cy/
a.lanitis@cyens.org.cy

CYENS DTP Committee

1. Prof. Andreas Lanitis, Cyprus University of Technology and BIO-SCENT MRG Leader, CYENS
2. Dr. Melinos Averkiou, Visual Computing Group Leader, CYENS
3. Dr. Constantine Kotropoulos, Department of Informatics, Aristotle University of Thessaloniki, Greece



CYENS
CENTRE OF EXCELLENCE

MRG: Deep Camera

Thematic Area: Deep-Learning based Color perception and High Dynamic Range Content management for complex multimedia systems with limited computational resources

Short Description:

The topic is concerned with Color perception and High Dynamic Range Content management for complex multimedia systems with limited computational resources, i.e., mobile phones, VR/AR headsets, e-watches, displays etc. The capability of our visual system to convey color information of the environment where we are interacting with is one of the most amazing and complex mechanisms that a human is experiencing in its daily life. However, to fully reproduce this experience is not an easy task. First only some aspects of the complete behavior of the human visual system are understood today. Second, nowadays we have available a large variety of digital color devices, i.e., mobile phones, High Dynamic Range displays, e-watches, SDR displays, projector systems, VR/AR headsets etc. with completely different characteristics. Third, the illumination conditions where images and video are often watched are not optimal. Fourth, these devices are equipped with different computational resources, e.g., e-watches and VR/AR sets have limited computational resources when compared to mobile phones and displays. This makes very hard to convey similar visual experience to different users using different digital devices. This work will investigate this issue, through the use of deep-learning approaches, in its complexity, providing solutions to some of the aspects of how the color and high dynamic range content needs to be managed to convey the most realistic visual experience even on devices with limited computational resources.

Candidates for this post should possess:

1. Both BSc and MSc in relative fields, i.e., Color Science, Image Processing, Computer Science etc.
2. Excellent computer programming skills, C/C++, Python.
3. Ability to organize and carry out research work independently.
4. Very good knowledge of English language.
5. Previous experiences in research activities is a plus, i.e., publications, research proposal writing.
6. Previous experiences in the use of deep-learning libraries, i.e., Tensorflow, Keras, Pytorch and Caffe is a plus.

Preferred qualifications include:

BSc and MSc in Computer Science and/or Color Science and/or Image Processing. Good programming skills in python and knowledge and ability to use deep-learning environments.

Responsible MRG:

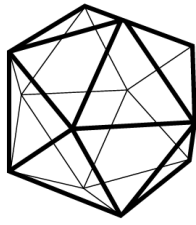
The successful candidate will be assigned to CYENS's DeepCamera MRG. The successful candidate will be registered at the University of Cyprus but will be based at CYENS.

For more information please contact:

Dr. Alessandro Artusi, Team Leader of MRG Deep Camera: The Next Generation of Image/Video Processing, email: a.artusi@cyens.org.cy

CYENS DTP Committee

1. Dr. Alessandro Artusi, DeepCamera MRG Leader, CYENS
2. Prof. Yiorgos Chrysantou, University of Cyprus and MRG Leader, CYENS
3. Prof. Karol Myszkowski, Max Planck Institute



CYENS
CENTRE OF EXCELLENCE

Thematic Area: Event Camera

Short Description: Event cameras are novel sensors that report brightness changes in the form of a stream of asynchronous “events” instead of intensity frames. They offer significant advantages with respect to conventional cameras: high temporal resolution, high dynamic range, and no motion blur. While the stream of events encodes in principle the complete visual signal, the reconstruction of an intensity image from a stream of events is an ill-posed problem in practice. Existing reconstruction approaches are based on hand-crafted priors and strong assumptions about the imaging process as well as the statistics of natural images. Better approaches are needed with less constraints or with little knowledge of the images to be acquired.

Candidates for this post should possess:

1. BSc and MSc in relative fields, i.e., Physics, Computer Science, Data Science, image Processing, Computer Vision etc.
2. Excellent computer programming skills, C/C++, Python.
3. Ability to organize and carry out research work independently.
4. Very good knowledge of English language.
5. Previous experiences in research activities is a plus, i.e., publications, research proposal writing.
6. Previous experiences in the use of deep-learning libraries, i.e., Tensorflow, Keras, Pytorch and Caffe is a plus.

Preferred qualifications include:

BSc in Physics and MSc in Computer Science or Data Science or Image Processing or Computer Vision. Good programming skills in python and knowledge and ability to use deep-learning environments.

Responsible MRG:

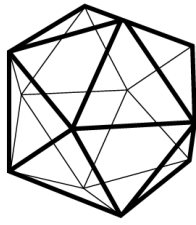
The successful candidate will be assigned to CYENS’s DeepCamera MRG. The successful candidate will be registered at the University of Cyprus but will be based at CYENS.

For more information please contact:

Dr. Alessandro Artusi, Team Leader of MRG Deep Camera: The Next Generation of Image/Video Processing , email: a.artusi@cyens.org.cy

CYENS DTP Committee

1. Dr. Alessandro Artusi, DeepCamera MRG Leader, CYENS
2. Prof. Yiorgos Chrysantou, University of Cyprus and MRG Leader, CYENS
3. Prof. Mateu Sbert, University of Girona



CYENS
CENTRE OF EXCELLENCE

MRG: ITICA

Thematic Area: Smart city data at the intersection of arts, science, and technology

Short Description:

“The New European Bauhaus movement is intended to be a bridge between the world of science and technology and the world of art and culture... it is about a new European Green Deal aesthetic combining good design with sustainability.”

— President of the European Commission, Ursula Von der Leyen

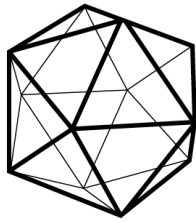
Smart technologies are revolutionizing how people approach everyday activities in cities across the globe. A holistic approach to innovation, however, does not merely concerns technological advancements/solutions, but also pivots on critical appreciations thereof, as well as on a thorough examination of their social ramifications and on the inclusion of the public in re-thinking and re-imagining emerging techno-scientific realities. It is, accordingly, acknowledged that artists and creative professionals play a pivotal role in innovation and science, investigating the way they resonate society—being critical of, and at the very same time, embracing emerging technological advancements. Innovative competencies call for new, interdisciplinary, and practice-led learning methods and methodologies. Creative approaches of sort set out the possibility to address the technological developments of our time in ever-critical fashions and to better understand their sociopolitical implications.

This project examines the interrelation between technological developments, their social implications, and situated creative practice. It investigates how domains/technologies such as IoT, AI, Big Data, chatbots, robotics and/or 3D printing challenge the existing ways to produce, construct, consume, travel, and behave in a more responsible, ethical and sustainable way. More specifically, and in this particular context, the candidate will undertake art-led research and will produce artworks and speculative artefacts employing data from the **iNicosia project***. Research could pivot on a broad array of frameworks, potentially concerning data analysis, scientific visualization/sonification, AI-driven image/audio synthesis, coding, self-generative algorithms, feminist/gender studies, critical thinking, ethics, cultural studies, or trends in history and present-day socio-political affairs, and following a multidisciplinary approach at the intersection of arts, science, and technology.

***The iNicosia project** is bringing together several CYENS teams and collaborators with knowledge, expertise and tools from a wide variety of complementary fields including Artificial Intelligence, Machine Learning, Data Analytics, Virtual Reality and the Internet of Things. iNicosia is creating a digital twin of the city that integrates all sources of available data—smart city, research, crowd-sourced and online—into a real-time 3D model. Through visualization and simulation, users of the digital twin can observe the real-time conditions of the city while glimpsing into the future based on information and projections. Simulation solutions are used to optimize planning activities and to assist in better decision-making. Through this multidisciplinary collaboration, iNicosia aims to become a point of reference in quality-of-life improvements, creativity and progress for local authorities, policy makers, scholars, residents, and visitors.

Candidates for this post should possess:

1. Bachelor's degree and postgraduate degree of master's level in a relevant field (e.g., Interactive Media, Heritage Studies, Art History, Fine Arts or Computer Science, Information Technology, Computer Engineering, or relevant degree) from an accredited institution.
2. Creative coding skills (e.g. in Python, C/C++, Processing, Unity3D, TouchDesigner or other)
3. Very good knowledge of English language.
4. Ability to organize and carry out research work.



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Preferred qualifications include:

Experience in data analysis, machine learning, and/or AI—especially in some creative context.
Experience in data sonification, visualisation, or sonification

Responsible MRG:

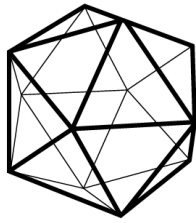
The successful candidates will be assigned to CYENS's Immersive Technologies for Intelligent and Creative Applications - ITICA MRG. The successful candidate will be registered at the Cyprus University of Technology (CUT) but will be based at CYENS.

For more information please contact:

Dr. Kleanthis Neokleous, ITICA Team Leader, email: k.neokleous@cyens.org.cy

CYENS DTP Committee

1. Dr. Kleanthis Neokleous, ITICA Team Leader, CYENS
2. Dr. Theopisti Stylianou-Lambert, Associate Professor at the Department of Multimedia and Graphic Arts at the Cyprus University of Technology and MRG Leader, CYENS
3. Prof. Manuela Naveau, PhD, Professor for Critical Data, Department of Interface Cultures, University of Art and Design Linz



CYENS
CENTRE OF EXCELLENCE

MRG: LEAR

Thematic Area: Humanoid Robot Learning from Video Demonstrations

Short Description:

The human body has long inspired artists, scientists and engineers. The capabilities offered by our unique design have allowed us to manipulate and build the complex world we live in. Despite their enormous potential, humanoid robots currently lack comparable versatility and skills. This project aims to develop a generic pipeline for skill learning in humanoid robots by observing humans demonstrate the tasks at hand.

The supervision team has expertise in artificial intelligence, robot learning, pose estimation from video and virtual humans.

Candidates for this post should possess:

1. M.Sc. Degree (or equivalent) from an accredited University in Computer Science, Computer Engineering, Electrical Engineering, Mechanical Engineering or related area.
2. Excellent knowledge of English.
3. Strong programming skills (in C++ and/or Python) and mathematical maturity.
4. Ability to organize and carry out research work.
5. Ability to learn quickly and work independently, as well as in a team.

Preferred qualifications include:

Experience in working with ROS, robotic simulators and in programming physical robots (especially humanoid robots). Knowledge of model-predictive control, reinforcement learning, computer vision or deep learning will be considered an advantage.

Responsible MRG:

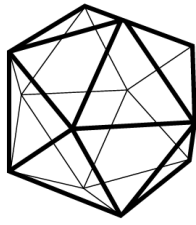
The successful candidate will be assigned to CYENS's LEAR MRG. The successful candidate will be registered at the University of Cyprus but will be based at CYENS.

For more information please contact:

Vassilis Vassiliades LEAR MRG Leader v.vassiliades@cyens.org.cy

CYENS DTP Committee

1. Dr. Vassilis Vassiliades, LEAR MRG Leader, CYENS
2. Prof. Yiorgos Chrysanthou, University of Cyprus and MRG Leader, CYENS
3. Dr. Jean-Baptiste Mouret, Inria, Nancy and Dr. Dimitrios Kanoulas, UCL



CYENS
CENTRE OF EXCELLENCE

Thematic Area: Continual Deep Reinforcement Learning

Short Description:

The field of machine learning has seen tremendous progress over the last few years in domains such as computer vision, speech and natural language processing, games and robotics. Despite their impressive performance, such systems require enormous data and computational resources for training, and they are highly specialized to their task - when this changes, they often forget completely how to solve their previously learned tasks. In contrast to such systems, human learning is efficient and robust to changing environments. Our brains can construct abstract models from their sensorimotor experience that permit efficient planning, rapidly assimilate new knowledge, and flexibly use it to build complex skills that generalize to many tasks. This project aims to make a significant step towards the highly sought goal of developing software agents that display continual learning abilities similar to humans. The successful candidate will build on top of the latest research on continual learning in deep neural networks, and hierarchical reinforcement learning, and will have the opportunity to evaluate the developed algorithms in tasks spanning the fields of robotics, games or computer animation.

The supervision team has expertise in machine learning, evolutionary computation, computer graphics/animation and robotics.

Candidates for this post should possess:

1. M.Sc. Degree (or equivalent) from an accredited University in a relevant field (e.g., Computer Science, Computer Engineering) with a focus on Artificial Intelligence / Machine Learning.
2. Excellent knowledge of English, including speaking and writing skills, as well as reading research articles.
3. Strong programming skills (in Python and/or modern C++).
4. Mathematical maturity (linear algebra, multivariate calculus & optimization, probability theory & statistics, algorithms & complexity, information theory).
5. Ability to learn quickly and work independently, as well as in a team.

Preferred qualifications include:

Strong interest in neuroscience-inspired artificial intelligence. Experience with (hierarchical) reinforcement learning, deep learning, continual learning, robotic simulators, or game engines will be considered an advantage.

Responsible MRG:

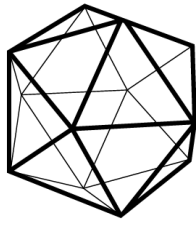
The successful candidate will be assigned to CYENS's LEAR MRG. The successful candidate will be registered at the University of Cyprus but will be based at CYENS.

For more information please contact:

Vassilis Vassiliades, LEAR MRG Leader, email: v.vassiliades@cyens.org.cy

CYENS DTP Committee

1. Dr. Vassilis Vassiliades, LEAR MRG Leader, CYENS
2. Prof. Yiorgos Chrysanthou, University of Cyprus and MRG Leader CYENS
3. Dr. Jean-Baptiste Mouret, Inria, Nancy



CYENS
CENTRE OF EXCELLENCE

MRG: Museum Lab

Thematic Area: Museums, Emerging Technologies and Art

Short Description: Increasingly artists are using emerging technologies, such as virtual reality (VR), augmented reality (AR), and mixed reality (MR), holograms, multimedia and interactive technologies to produce their work. These technologies are changing rapidly and, as a result, museums are faced with a number of challenges when it comes to acquiring, maintaining, conserving and displaying this kind of art. The candidate will be expected to conduct extensive research on how museums and galleries acquire, maintain, preserve and display art that uses emerging technologies. This project aims to: (a) identify the challenges faced by museum professionals when dealing with art that uses emerging technologies; (b) identify the concerns of artists who use emerging technologies; and (c) register best practices.

Candidates for this post should possess:

1. M.A. Degree from an accredited University on Museum Studies, Heritage Studies, Art History or relevant degree
2. Excellent knowledge of English language.
3. Ability to organize and carry out research independently.

Experience with technology, museums or other heritage sites will be considered an advantage. Prior experience in research activities (i.e. publication record, submitting research proposals, participating in research programs) or/and experience in programing will be considered an advantage.

The application should include a letter of interest or statement of purpose written in English, that explains/describes why the applicant wishes to undertake this specific study, his/her research objectives and other relevant information (500-800 words maximum).

Responsible MRG

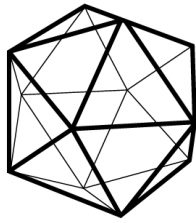
The successful candidates will be assigned to RISE's Museum Lab MRG. The successful candidate will be registered at the Cyprus University of Technology but will be based at RISE.

For more information please contact:

Dr. Theopisti Stylianou-Lambert, Team Leader of Museum Lab MRG and Associate Professor at the Cyprus University of Technology. Email: theopisti.stylianou@cut.ac.cy

Supervisory Team

1. Dr. Theopisti Stylianou-Lambert, Associate Professor, Cyprus University of Technology and Museum Lab MRG Leader, CYENS
2. Dr. Kleanthis Neocleous, ITICA MRG Leader, CYENS
3. Prof. Sarah Kenderdine, Professor of Digital Museology at the École polytechnique fédérale de Lausanne (EPFL).



CYENS
CENTRE OF EXCELLENCE

MRG: Visual Computing Group

Thematic Area: Urban Semantic Understanding

Short Description: Semantic understanding of urban data (e.g., buildings, streets, neighborhoods) is critical for urban sensing as well as many commercial applications such as accurate antenna placement for cellular networks, flood planning, and architectural urban visualisations. In this project the goal is to utilize deep neural network architectures to fuse and understand noisy urban data from multiple sources such as lidar scans, GIS, and street-view images.

The Visual Computing Group's research focuses on data-driven methods for learning semantics from 3D and 2D data. The group develops deep learning architectures to acquire, model, and ultimately understand the semantics of real-world environments at multiple scales, ranging from single objects, indoor scenes, buildings, and ultimately entire cities.

Candidates for this post should possess:

1. Undergraduate (BSc) and postgraduate degree (MSc or MPhil) in a relevant field (e.g., Computer Science, Computer Engineering, Information Technology) from an accredited institution, preferably with emphasis on Computer Graphics / Computer Vision / Machine Learning.
2. Strong coding skills in Python, Matlab, C++, C (experience with CUDA is an advantage).
3. Confidence in mathematics (e.g., linear algebra, geometry processing, probabilistic methods).
4. Self-motivation, ability to work independently, and excellent problem-solving skills.
5. Very strong written and oral English language communication skills.

Preferred qualifications include:

1. Proven experience with ML/DL frameworks, e.g., TensorFlow, PyTorch, Keras, FastAI.
2. Knowledge of Conda package and environment management system, Docker or Kubernetes will be considered as an advantage.
3. Prior publications in the area (desirable but not essential).

Responsible MRG:

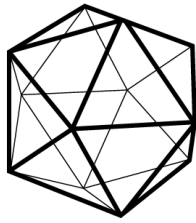
The successful candidates will be assigned to CYENS Visual Computing Group. The successful candidate will be registered at the University of Cyprus but will be based at CYENS.

For more information please contact:

Dr Melinos Averkiou, Visual Computing Group MRG Leader, email: m.averkiou@cyens.org.cy

CYENS DTP Committee

1. Dr. Melinos Averkiou, Visual Computing Group MRG Leader, CYENS
2. Prof. Yiorgos Chrysanthou, University of Cyprus and MRG Leader, CYENS
3. Dr. Tom Kelly, University of Leeds



CYENS
CENTRE OF EXCELLENCE

Thematic Area: 3D Segmentation for Scene Understanding

Short Description: 3D segmentation is a task essential to applications that require an understanding of real-world 3D scenes, such as robotics, artificial intelligence (AI), augmented or virtual reality (AR/VR), and autonomous navigation/driving. The successful candidate is expected to conduct cutting-edge, fundamental research at the intersection of computer vision, computer graphics and machine learning, by integrating concepts and methods from these areas to advance the state of the art in 3D scene understanding.

The Visual Computing Group's research focuses on data-driven methods for learning semantics from 3D and 2D data. The group develops deep learning architectures to acquire, model, and ultimately understand the semantics of real-world environments at multiple scales, ranging from single objects, indoor scenes, buildings, and ultimately entire cities.

Candidates for this post should possess:

1. Undergraduate (BSc) and postgraduate degree (MSc or MPhil) in a relevant field (e.g., Computer Science, Computer Engineering, Information Technology) from an accredited institution, preferably with emphasis on Computer Graphics / Computer Vision / Machine Learning.
2. Strong coding skills in Python, Matlab, C++, C (experience with CUDA is an advantage).
3. Confidence in mathematics (e.g., linear algebra, geometry processing, probabilistic methods).
4. Self-motivation, ability to work independently, and excellent problem-solving skills.
5. Very strong written and oral English language communication skills.

Preferred qualifications include:

1. Proven experience with ML/DL frameworks e.g., TensorFlow, PyTorch, Keras, FastAI.
2. Knowledge of Conda package and environment management system, Docker or Kubernetes will be considered as an advantage.
3. Prior publications in the area (desirable but not essential).

Responsible MRG:

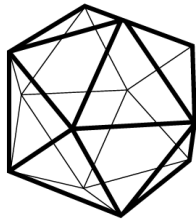
The successful candidates will be assigned to CYENS Visual Computing Group. The successful candidate will be registered at the University of Cyprus but will be based at CYENS.

For more information, please contact:

Dr Melinos Averkiou, Visual Computing Group MRG Leader, email: m.averkiou@cyens.org.cy

CYENS DTP Committee

1. Dr. Melinos Averkiou, Visual Computing Group MRG Leader, CYENS
2. Prof. Yiorgos Chrysanthou, University of Cyprus and MRG Leader, CYENS
3. Dr. Evangelos Kalogerakis, University of Massachusetts - Amherst



CYENS
CENTRE OF EXCELLENCE

MRG: VR for Well Being

Thematic Area: VR for Physio/Psycho/Social Well-Being

Short Description: The main goal is to push the capabilities of the VR systems beyond their current state of the art capabilities, aiming to contribute to people's (i) physical well-being targeting motor rehabilitation of patients or/and to the physical condition improvement of non-patients or/and (ii) psychological well-being or/and (iii) social well-being. Concepts such as neuro-plasticity, exergaming, embodiment illusion, can be explored towards this end.

Supervising DTP committee experience covers Virtual Reality, Computer Graphics, Well-Being, Social Inclusion through extensive previous work on these topics.

Candidates for this post should possess:

1. Bachelor's degree or/and postgraduate degree of Master's level in a relevant field (e.g. Interactive Media, Computer Science, Information Technology, Computer Engineering, Neuroscience, Psychology) from an accredited institution
2. Strong computer programming skills and expertise with a game engine (e.g. Unity)
3. Expertise with Virtual and/or Augmented Reality technologies
4. Familiarisation with Interactive virtual environments, 3D modelling concepts and softwares
5. Experience in experimental research (related to VR)/ statistical analysis – successful completion of a 'research methodologies' university-level course
6. An interest/knowledge in Neuroscience/Psychology aspects
7. At least very basic understanding of Machine Learning or Neural Networks concepts
8. Very good knowledge of English language.
9. Ability to organize and carry out research work.
10. Excellent computer skills and ability to learn quickly.

Preferred qualifications include:

Experience in biosignals' acquisition and biomeasurements' analysis

Responsible MRG:

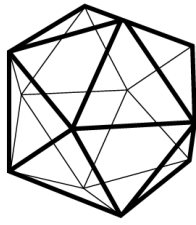
The successful candidate will be assigned to CYENS's VR for Well Being MRG. The successful candidate will be registered at the Cyprus University of Technology and will be based at CYENS.

For more information please contact:

Dr Despina Michael-Grigoriou, VR for Well Being MRG Leader, email: d.grigoriou@cyens.org.cy

CYENS DTP Committee

1. Dr Despina Michael-Grigoriou, Visual Sciences Pillar Leader & VR for Well Being MRG Leader, CYENS and Cyprus University of Technology
2. Dr Andri Ioannou, Cyprus University of Technology and MRG Leader, CYENS
3. Prof. Kiyoshi Kiyokawa, Nara Institute of Science and Technology or Prof. Nadia Magnenat-Thalmann, University of Geneva



CYENS
CENTRE OF EXCELLENCE

Thematic Area: New technologies for Virtual Reality

Short Description: The work within this PhD thesis is to propose new (or enhance existing) technologies/approaches for Virtual Reality. The goal of the thesis is to push the capabilities of the VR systems beyond their current state of the art capabilities.

Supervising DTP committee experience covers Virtual Reality, Computer Graphics, Well-Being, Computer Vision, Machine Learning, through extensive previous work on these topics.

Candidates for this post should possess:

1. Bachelor's degree or/and postgraduate degree of Master's level in a relevant field (e.g. Interactive Media, Computer Science, Information Technology, Computer Engineering) from an accredited institution
2. Strong computer programming skills and expertise with a game engine (e.g. Unity)
3. Expertise with Virtual and/or Augmented Reality technologies
4. Familiarization with Interactive virtual environments, 3D modelling concepts and softwares
5. Experience in experimental research (related to VR)/ statistical analysis – successful completion of a 'research methodologies' university-level course
6. An interest/knowledge in Neuroscience/Psychology aspects
7. Very good knowledge of English language.
8. Ability to organize and carry out research work.
9. Excellent computer skills and ability to learn quickly.

Preferred qualifications include:

Experience in biosignals' acquisition and biomeasurements' analysis

Responsible MRG:

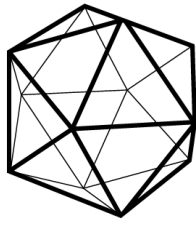
The successful candidate will be assigned to CYENS's VR for Well Being MRG. The successful candidate will be registered at the Cyprus University of Technology and will be based at CYENS.

For more information please contact:

Dr Despina Michael-Grigoriou, VR for Well Being Team Leader, email: d.grigoriou@cyens.org.cy

CYENS DTP Committee

1. Dr Despina Michael-Grigoriou, VR for Well Being Team Leader, CYENS and Cyprus University of Technology
2. Dr Andreas Lanitis, Cyprus University of Technology and MRG Leader, CYENS
3. Prof. Nadia Magnenat-Thalmann, University of Geneva or Prof. Kiyoshi Kiyokawa, Nara Institute of Science and Technology



CYENS
CENTRE OF EXCELLENCE

MRG: Real-Time Populated Virtual Environments

Thematic Area: Virtual humans in Augmented Reality

Short Description: Augmented Reality (AR) aims to enhance the physical world through the use of digital elements, visual or otherwise. With the rapid advancement of AR hardware and algorithms, huge progress has been made over the past few years, to the point where we are now looking at realistic immersive solutions, using AR headsets (such as the MS HoloLens 2). One problem, however, that remains mostly untapped is the addition of realistic virtual humans (VH) that would inhabit the same physical space as the user. These virtual humans could be avatars of other remote users or they could be entirely digitally generated and controlled. This PhD will investigate how we can add such VH in real-time solutions focusing mostly behavior and animation, in their interaction with the environment and the user

Candidates for this post should possess:

1. Postgraduate Degree of Master's level from an accredited university in Computer Science or Computer Engineering or Electronic or Electrical Engineering or any related field.
2. Excellent computer programming skills.
3. Ability to organize and carry out research work independently.
4. Very good knowledge of English language.

Preferred qualifications include:

1. Previous experiences in research activities is a plus, i.e., publications, research proposal writing.
2. Previous experiences in computer graphics, computer vision, VR/AR, or the use of deep-learning libraries is a plus.

Responsible MRG:

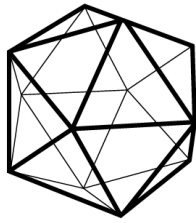
The successful candidate will work in the group *Real-Time Populated Virtual Environments*, under the supervision of Yiorgos Chrysanthou, will be registered at the UCY but will be based at CYENS.

For more information please contact:

Prof. Yiorgos Chrysanthou, University of Cyprus, Team Leader of Real-Time Populated Virtual Environments MRG at CYENS, email: y.chrysanthou@cyens.org.cy

RISE DTP Committee

1. Prof. Yiorgos Chrysanthou, Real-Time Populated Virtual Environments MRG Leader, CYENS and University of Cyprus
2. Dr. Panayiotis Charalambous, MRG Leader, CYENS
3. Prof. Anthony Steed, University College London



CYENS
CENTRE OF EXCELLENCE

MRG: SNS

Thematic Area: Security for Edge Computing-based Industrial IoT Networks

Short Description:

Emerging trends in computing, communications and networking move towards fog computing and mobile edge computing (MEC). According to these trends, computation moves to the edges of the network (hence from cloud to fog to edge) to serve newly emerging applications with strict response deadlines. The challenges pertaining to this move defy some of the most fundamental operations taking place in the Internet infrastructure today. Being at the intersection between IoT and Cloud, Edge/Fog Computing inherits all the security and privacy issues of both paradigms, but these become more critical due to the safety issues of industrial systems. By extending the Cloud computing model towards the Edge we expand the attack surface, as in principle any Edge/Fog device could be an entry point for attacking the overall system. Secure data storage, secure computation, network security, authentication, are all examples of security challenges that need to be addressed to realise the Edge/Fog computing vision.

This PhD will deal with a combination of the following: analyze the security threats of the Edge/Fog Computing infrastructure for Industry 4.0, develop a security framework that takes advantage of the Edge and Fog Nodes and Time-Sensitive Networking (TSN) as security-enabling components of the system, investigate Distributed Ledger Technologies (DLTs) to deal with transactions through trust-less IoT and edge-computing nodes, and encompass all these within a Security-by-Design overarching framework.

Candidates for this post should possess:

1. MSc in Computer Science, Computer Engineering, Electrical Engineering, Electronics Engineering, or related area.
2. Excellent knowledge of the English language.
3. Strong programming skills
4. Ability to organize and carry out research work and ability to learn quickly.

Preferred qualifications include:

Expertise in Network or System Security. Knowledge of mobile networks and IoT. Familiarity with cloud and Fog computing will be an advantage.

Responsible MRG:

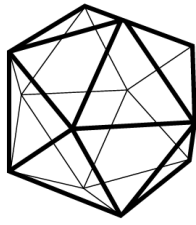
The successful candidates will be assigned to CYENS's the Smart Networked Systems (SNS) Multidisciplinary Research Group (MRG). The successful candidate will be registered at the University of Cyprus, Department of Computer Science.

For more information please contact:

Dr. Vasos Vassiliou, Associate Professor, University of Cyprus, Team Leader of SNS MRG at CYENS, email: vasosv@cyens.org.cy

CYENS DTP Committee

1. Dr. Vasos Vassiliou, SNS MRG Leader, CYENS and University of Cyprus
2. Dr. Andreas Kamilaris, Superworld MRG Leader, CYENS
3. Dr. Utz Roedig, University College Cork, IE



CYENS
CENTRE OF EXCELLENCE

Thematic Area: Distributed Optimization for 5G and 6G Virtualized Wireless Networks

Short Description:

The 5G mobile network architecture is already consolidated in terms of network components, technologies and interfaces. However, this potential of 5G and the upcoming 6G, cannot be fully harnessed without the appropriate algorithmic innovations and data-driven network automation that will permit full exploitation, global management and end-to-end integration of all the heterogeneous network components and resources. Different features of network automation will be studied and recent advances in machine learning will be used. In this project we will focus on MEC-empowered service provisioning, and end-to-end network slicing, all integrated and jointly orchestrated by forward-looking data-driven analytics-powered network control and automation. This PhD will be aligned with considered features in the latest 3GPP releases (R16 and R17). Resource allocation, in terms of which services run where, through learning algorithms or market-driven approaches, will be integrated into routing and transport layer protocols. The successful candidate will investigate the effects of different machine learning approaches on the performance of automated networks with different objectives and primary applications.

Candidates for this post should possess:

1. MSc in Computer Science, Computer Engineering, Electrical Engineering, Electronics Engineering, or related area.
2. Excellent knowledge of the English language.
3. Strong programming skills
4. Ability to organize and carry out research work and ability to learn quickly.

Preferred qualifications include:

Familiarity with mobile network architectures and protocols, especially 4G and 5G; Good understanding of Machine Learning.

Responsible MRG:

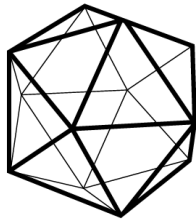
The successful candidates will be assigned to CYENS's the Smart Networked Systems (SNS) Multidisciplinary Research Group (MRG). The successful candidate will be registered at the University of Cyprus, Department of Computer Science.

For more information please contact:

Dr. Vasos Vassiliou, Associate Professor, University of Cyprus, Team Leader of SNS MRG at CYENS, email: vasosv@cyens.org.cy

CYENS DTP Committee

1. Dr. Vasos Vassiliou, SNS MRG Leader and University of Cyprus
2. Dr. Loizos Michael MRG Leader, CYENS and Open University of Cyprus
3. Dr. Hamed Ahmadi, University of York, UK



CYENS
CENTRE OF EXCELLENCE

MRG: SCRAT

Thematic Area: Artificial Intelligence, Cognitive Science, and Social Robotics

Short Description: In recent years it is becoming increasingly evident that the view of Artificial Intelligence as simply a set of tools and techniques that are heuristically shown to be able to fit data ends up with brittle solutions that can be easily outsmarted by adversarially-chosen inputs, cannot naturally interact with humans as they do not take into account their cognitive abilities and limitations, and in general lack the social competencies needed when working in groups. The applicant will be expected to work towards the development of AI solutions for physical robots (including drone swarms) or virtual agents that exhibit identifiable cognitive and social skills. The supervision team has expertise in knowledge-driven solutions to AI, the theoretical study of machine learning, the development of robot learning techniques that are robust to a changing environment (and in particular to failures of the robot parts), and in developing solutions for robots in social contexts, including on their deployment in real-life settings and in collaborative teams.

Candidates for this post should possess:

1. M.Sc. Degree (or equivalent) from an accredited University on Computer Science, Artificial Intelligence, Machine Learning, Cognitive Systems / Science, Robotics, or related areas. Candidates with other backgrounds but with an otherwise solid profile may also be considered.
2. Very good knowledge of English, especially in reading technical / research articles.
3. Ability to organize and carry out research work within the scope of the relevant MRG.
4. Excellent relevant programming skills, mathematical maturity, and ability to learn quickly.

Preferred qualifications include: Prior experience in the development of AI solutions guided by evidence from Cognitive Science / Psychology and Social Science. Prior experience in programming and working with physical robots or virtual agents that simulate robots, and especially ones that operate in robot teams (including drone swarms) or heavily interact with other human team-members.

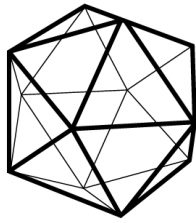
Responsible MRG: The successful candidate will be assigned to CYENS's Socially-Competent Robotic an Agent Technologies (SCRAT) MRG. The successful candidate will be registered at Open University of Cyprus but will be based at CYENS.

For more information please contact:

Dr. Loizos Michael, SCRAT MRG Team Leader, email: loizos@cyens.org.cy / loizos@ouc.ac.cy

CYENS DTP Committee

1. Dr. Loizos Michael, SCRAT MRG Leader, CYENS and Open University of Cyprus
2. Dr. Vassilis Vassiliades, LEAR MRG Leader, CYENS
3. Dr. Mary-Anne Williams, Distinguished Research Professor / Director, Innovation and Enterprise Research Lab, Centre of Artificial Intelligence, University of Technology Sydney, Australia / Fellow, Stanford University



CYENS
CENTRE OF EXCELLENCE

Thematic Area: Explainable AI, Cognitive Assistants, and Business Process Automation.

Short Description: One of the major technological disruptions that Artificial Intelligence is foreseen to have is through the development of solutions to enhance human cognition by automating repetitive tasks, supporting human decision-making in complex settings, and providing targeted, personalized, and contextual information to humans living in an increasingly data-driven interconnected world. The applicant will be expected to work towards the development of AI solutions for cognitive assistants that facilitate life in smart cities / buildings or enhance decision-making in health, fintech, retail, etc.

The supervision team has expertise in knowledge-driven solutions to AI, the theoretical study of machine learning, the use of deep learning for policy learning in complex dynamic environments, and the use of technology to augment people's cognitive abilities towards enabling them to make rational decisions despite the real-world complexities due to poor data, changing goals, and limited resources.

Candidates for this post should possess:

1. M.Sc. Degree (or equivalent) from an accredited University on Computer Science, Artificial Intelligence, Machine Learning, Cognitive Systems / Science, Data Science, or related areas. Candidates with other backgrounds but with an otherwise solid profile may also be considered.
2. Very good knowledge of English, especially in reading technical / research articles.
3. Ability to organize and carry out research work within the scope of the relevant MRG.
4. Excellent relevant programming skills, mathematical maturity, and ability to learn quickly.

Preferred qualifications include: Prior experience in the development of AI solutions for cognitive assistants, user profiling and personalization, and applications in the context of a smart city / building or business and innovation domains where trustworthy and robust technologies are necessary. Prior experience in working with, analyzing, and visualizing user / city / building / business data, and especially ones that would lead to tangible and measurable improvements to the human experience.

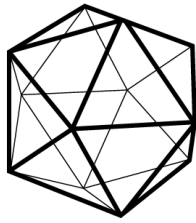
Responsible MRG: The successful candidate will be assigned to CYENS's Socially-Competent Robotic an Agent Technologies (SCRAT) MRG. The successful candidate will be registered at Open University of Cyprus but will be based at CYENS.

For more information please contact:

Dr. Loizos Michael, SCRAT MRG Team Leader, email: loizos@cyens.org.cy / loizos@ouc.ac.cy

CYENS DTP Committee

1. Dr. Loizos Michael, SCRAT MRG Leader, CYENS and Open University of Cyprus
2. Dr. Vassilis Vassiliades, LEAR MRG Leader, CYENS
3. Dr. Biplav Srivastava, Professor, AI Institute, University of South Carolina / ACM Distinguished Scientist / AAAI Senior Member / IEEE Senior Member



CYENS
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MRG: SuPerWorld

Thematic Area: Environmental Monitoring for Understanding and Quantifying Climatic Change

Short Description: Can we use emerging environmental technologies (i.e. Internet of Things, satellite imagery, aerial photography) to better understand climatic change and quantify its impacts? Can we understand how climatic change affects agriculture, food security, water availability, air quality, biodiversity, etc. Which are the actual risks for the affected human population and natural ecosystems? How can better monitoring at large-scale help us better understand those risks and propose effective, scalable and holistic nature-based solutions?

Candidates for this post should possess:

1. MSc in Computer Science or Computer Engineering, or related area
2. Excellent knowledge of English
3. Good programming skills
4. Be able to organize and carry out research work

Preferred qualifications include:

1. Modelling skills
2. Computer vision and deep learning
3. Ability to learn quickly and eagerness to try new emerging technologies, such as remote satellite sensing, Internet of Things etc.
4. Geospatial analysis

Responsible MRG:

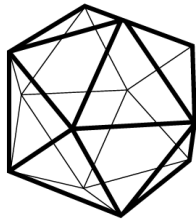
The successful candidate will be assigned to CYENS' SuPerWorld MRG. The successful candidate will be registered at the Cyprus University of Technology but will be based at CYENS.

For more information please contact:

Andreas Kamilaris, SuPerWorld MRG Leader, a.kamilaris@cyens.org.cy

CYENS DTP Committee

1. Dr. Andreas Kamilaris, SuPerWorld MRG Leader, CYENS
2. Prof. Andreas Lanitis, BIO-SCENT MRG Leader, CYENS and Cyprus Technical University
3. Prof. Paul Havinga, University of Twente, The Netherlands



CYENS
CENTRE OF EXCELLENCE

Thematic Area: Geospatial Analysis for Disaster Prevention

Short Description:

Which are the risks of various European communities in possible disasters? What about wildfires and people living in the forest? What about tsunamis and people living at the seaside? Or flooding in areas near or below sea level? Are there evacuation and/or disaster response plans available? Which are the actual risks for the affected human population? Disasters might not be only natural, but also relevant to infrastructures and services, e.g., disasters in electricity and water distribution networks, disasters in health systems, etc.

Candidates for this post should possess:

1. MSc in Computer Science or Computer Engineering, or related area
2. Excellent knowledge of English
3. Good programming skills
4. Be able to organize and carry out research work

Preferred qualifications include:

1. Modelling skills
2. Geospatial analysis and knowledge of GIS
3. Ability to learn quickly and eagerness to try new emerging technologies, such as deep learning and hyperspectral imaging, remote satellite sensing etc.

Responsible MRG:

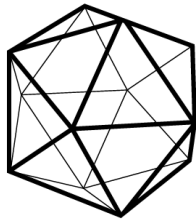
The successful candidate will be assigned to CYENS' SuPerWorld MRG. The successful candidate will be registered at the Open University of Cyprus but will be based at CYENS.

For more information please contact:

Andreas Kamilaris, SuPerWorld MRG Leader, a.kamilaris@cyens.org.cy

CYENS DTP Committee

1. Andreas Kamilaris, SuPerWorld MRG Leader
2. Prof. Andreas Lanitis, BIO-SCENT MRG Leader, CYENS and Cyprus Technical University
3. Prof. Dr.-Ing. Benjamin Wagner vom Berg, University of Applied Science Bremerhaven, Germany



CYENS
CENTRE OF EXCELLENCE

MRG: TAG

Thematic Area: Towards Trustworthy AI: Human Oversight of Algorithms

Short Description: Increasingly, human decisions and actions are being replaced by algorithmic processes and systems, which can increase efficiency by automating repetitive tasks. However, such systems are often characterized by an opaque and/or proprietary nature and can be susceptible to systematic biases in their behaviors. The European Commission has put forward a set of requirements for Trustworthy systems; one of these is *human agency and oversight*. We invite applications for doctoral projects that investigate means of facilitating human oversight mechanisms, for instance, using crowdsourcing / human computation for monitoring the behaviors of common systems/processes.

Candidates for this post should possess:

1. An MSc from an accredited university in computer science, information systems, information science, or a related area with considerable experience on programming skills.
2. A demonstrated interest in human computation and crowdsourcing.
3. Excellent communication skills (verbal and written) in the English language.
4. Ability to organize and carry out research work, as evidenced by previous publications and/or MSc dissertation.
5. Programming skills – at least intermediate skills in data science programming (Python) or Web development and SQL.
6. Basic understanding of Machine Learning techniques e.g., supervised machine learning, decision trees, logistic regression, etc.

Preferred qualifications include:

1. Previous experience working in a research team
2. Research publications
3. Ability to work with visualization tools to visualize data e.g., ggplot, d3.js and Matplotlib, and Tableau.

Responsible MRG:

The successful candidate will be assigned to CYENS's TAG MRG. The successful candidate will be registered at the Open University of Cyprus but will be based at CYENS.

For more information please contact:

Dr. Jahna Otterbacher, TAG MRG Leader, email: j.otterbacher@cyens.org.cy

CYENS DTP Committee

1. Dr. Jahna Otterbacher, TAG MRG Leader, CYENS and Open University Cyprus
2. Dr. Vasos Vassiliou, University of Cyprus, SNS MRG Leader, CYENS
3. Prof. Fausto Giunchiglia, Department of Information Engineering and Computer Science, The University of Trento