Research Internships 2025

CYENS Centre of Excellence

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EDMEDIA RESEARCH GROUP

1. LEARNING EXPERIENCE DESIGN

Description of Internship

The intern will work on issues related to Learning Experience Design, based on ongoing projects of the EdMedia Group (Cyprus Interaction Lab), https://www.cyprusinteractionlab.com/.

Required Skills

- UI/UX
- design & technology
- EdTech
- TechEd

Internship Objectives

To support ongoing projects and gain experience for future projects which might get funded.

Expected Deliverables

To be agreed between the team leaders and the intern.

2. LEARNING DESIGN & TECHNOLOGY

Description of Internship

Work on projects in the general area of Learning Design & Technology, related to current work of the lab, https://www.cyprusinteractionlab.com/

Required Skills

- EdTech
- Design
- Computer Science
- Informatics
- Human-Computer Interaction
- Multimedia

Internship Objectives

To be discussed depending on the candidates' profile

Expected Deliverables

To be discussed depending on the candidates' profile

1. EXPLORING AND MITIGATING BIASES IN JOB INTERVIEWS USING AUGMENTED REALITY

Description of Internship

This project will investigate how implicit biases in job interviews impact fairness and inclusivity. The intern will develop and apply AR overlays that manipulate visual, vocal, and behavioral cues to simulate controlled interview scenarios. The goal is to evaluate whether AR interventions can mitigate bias during the evaluation process. The intern will design experiments, run user studies in simulated interview environments, and work toward developing design guidelines that promote equitable hiring practices.

Required Skills

- Experience with AR development (e.g., using Unity3D, AR glasses, or smartphone-based AR apps)
- Basic understanding of experimental design and data analysis

Internship Objectives

- Review existing literature on implicit bias and AR interventions in hiring
- Design and implement AR overlays to modify candidate attributes (appearance, voice, behaviour)
- Conduct controlled experiments comparing standard interviews to AR-enhanced sessions
- Analyse quantitative and qualitative data to assess the impact of AR interventions
- Prepare research findings for publication

Expected Deliverables

- A comprehensive literature review document
- Functional AR prototype(s) for bias mitigation in interviews
- Detailed experimental design and user study protocols
- Collected data with analysis reports highlighting findings
- An academic paper draft to be submitted at a top-tier venue

2. PERSONAL SPACE IN VR: INVESTIGATING ETHICAL BOUNDARIES AND PERCEPTIONS OF AVATAR PROXIMITY

Description of Internship

This project will examine the ethical dimensions of personal space in virtual reality. The intern will explore how varying levels of avatar proximity affect user comfort, emotional response, and ethical perceptions across different contexts (social, professional, gaming). The project involves creating dynamic VR scenarios that adjust avatar behavior and proximity, collecting user feedback, and analyzing the influence of cultural and personality factors on personal space preferences.

This project examines how negative behaviors in social virtual reality (VR)—such as harassment, identity theft, and personal space violations—affect users beyond the virtual environment. The study will investigate whether these experiences influence users' real-world behavior, relationships, and perceptions of safety, or if they remain confined to social VR. It will explore potential links between virtual interactions and real-life consequences in areas such as privacy concerns, ethical implications, social interactions, and digital identity management. The intern will assist with literature review, identifying relevant VR platforms and incidents,

participant recruitment, qualitative data collection, and analysis. This role is suited for individuals with experience in VR, qualitative research, cybersecurity, psychology, or digital ethics.

Required Skills

- Experience with VR development (e.g., using Unity3D or Unreal Engine) OR background in VR platforms (e.g., VRChat, Horizon Worlds, Rec Room)
- Experience in experimental design within VR environments OR experience in qualitative research, sociology, psychology, cybersecurity, or digital ethics
- Familiarity with user experience (UX) research and data analysis
- Basic understanding of ethical issues in virtual environments is desirable
- Ability to assist with interviews, surveys, and qualitative data analysis
- Strong organizational skills for participant recruitment

Internship Objectives

- Review existing research on harassment, identity theft, and personal space violations in social VR
- Identify and document relevant cases of negative behaviours in social VR environments
- Assist in participant recruitment and data collection through interviews and surveys
- Support data processing, including cleaning, annotation, and thematic analysis
- Analyse whether and how experiences in social VR carry over into users' real lives

Expected Deliverables

- A literature review on personal space and ethics in VR
- Support with data collection, cleaning and anotation
- A report reviewing industry responses, safety measures, and user strategies for managing VR-related risks
- An academic paper draft to be submitted at a top-tier venue

3. THE ROLE OF PERSONALITY TRAITS AND NEED FOR COGNITION IN AR NEWS CONSUMPTION ON SMART GLASSES

Description of Internship

This project will explore how individual differences influence engagement, comprehension, and usability when consuming news via AR on smart glasses. The intern will develop a dual-mode AR application featuring head-anchored and path-anchored interfaces. The study will compare detailed versus summarized news content under static and dynamic conditions, with the aim of deriving design guidelines for personalized AR news experiences.

Required Skills

- Experience with AR development using platforms (e.g., Unity3D or Unreal Engine)
- Strong UX/UI design skills
- Knowledge of experimental design and statistical analysis
- Familiarity with psychological constructs (e.g., Big Five personality traits, need for cognition) is beneficial but not mandatory

Internship Objectives

- Conduct a literature review on AR-based news consumption and related personality research

- Develop AR prototypes with anchoring modes and content styles
- Conduct a user study to evaluate engagement, comprehension, safety, and usability
- Analyse how personality traits and cognitive needs impact AR interaction
- Prepare research findings for publication

Expected Deliverables

- A detailed literature review on AR news consumption and personalization
- Working AR application prototypes for both head-anchored and path-anchored displays
- Complete experimental design, including user study protocols and data collection methods, and data analysis
- An academic paper draft to be submitted at a top-tier venue

4. EXPLORING AUDIENCE EXPERIENCES IN VR MUSIC CONCERTS

Description of Internship

This project will examine the experiences of audiences attending music concerts in Virtual Reality. Using a mixed-methods approach, it will explore how users engage with these events, the social and emotional aspects of participation, and how different VR environments shape audience experiences. Data collection will involve interviews, ethnographic observations, and surveys at a range of VR music events. The intern will contribute to data collection and annotation, literature review, participant recruitment, and the identification of suitable VR concerts for study. This role is ideal for someone with experience in VR, qualitative research, or a background in music and performance studies.

Required Skills

- Experience with VR platforms (e.g., VRChat, Horizon Worlds, WaveXR) OR
- Background in qualitative research, sociology, anthropology, music, or human-computer interaction
- Strong organizational skills for participant recruitment
- Ability to conduct and analyze interviews and ethnographic observations is beneficial but not mandatory
- Interest in digital culture, music performances, and virtual communities

Internship Objectives

- Review existing research on virtual concerts, audience engagement, and digital music experiences
- Review industry-led initiatives, commercial VR music platforms, and non-academic discussions of virtual concerts
- Identify and document relevant VR music events for study
- Conduct interviews and ethnographic observations at selected events
- Assist with survey design and participant recruitment
- Support data annotation and qualitative analysis

Expected Deliverables

- A literature review summarizing research on VR music concerts and audience participation
- A report reviewing existing VR music events, industry initiatives, and key commercial or artistic developments
- A cleaned and annotated dataset of interviews, observational notes, and survey responses
- An academic paper draft to be submitted at a top-tier venue

ITICA/MUSEUM LAB RESEARCH GROUP

1. USER INTERFACE (UI) AND USER EXPERIENCE (UX) DESIGN FOR CULTURAL HERITAGE APPLICATIONS.

Description of Internship

The intern(s) will assist in designing the UI and UX for cultural heritage applications (mobile and XR).

Required Skills

- Related studies or work in Graphic Design, UI, UX.
- Knowledge of graphic or interface design tools (Adobe Photoshop, Illustrator, Canva, Figma).
- Good communication skills.

Internship Objectives

- Design interfaces for applications that will be used in cultural heritage sites and exhibitions.
- Collaborate with a multidisciplinary team (engineers, musicologists, etc.)

Expected Deliverables

Interfaces for cultural heritage sites, along with style guides.

2. XR TECHNOLOGIES FOR ACCESSIBILITY IN CULTURAL HERITAGE SITES

Description of Internship

The intern(s) will assist in developing accessibility tools for cultural heritage sites using XR technologies.

Required Skills

- A background in Computer Science or related field
- Experience with XR technologies or game engines

Internship Objectives

- Develop accessible XR tools for cultural heritage sites
- Identify best practices to promote the design of accessible solutions in cultural heritage sites

Expected Deliverables

Prototypes showcasing how XR technologies can facilitate accessibility in cultural heritage sites.

3. STUDY OF USER EXPERIENCE IN XR APPLICATIONS

Description of Internship

The intern(s) will assist in the collection and analysis of data on users' interactions with and perception of avatars in VR applications.

Required Skills

- A background in psychology or neuroscience or human-computer interaction
- Statistical skills

- Experience with XR technologies

Internship Objectives

To collect and analyse data from experiments with human participants

Expected Deliverables

Report about the findings of the user study

4. DEVELOPMENT OF IMMERSIVE VR EXPERIENCES

Description of Internship

The intern(s) will develop idea prototypes for an immersive experience in VR using existing 3D models of different areas in the Nicosia Buffer Zone.

Required Skills

- A background in Computer Science or related field
- Experience with XR technologies or game engines
- Good communication skills

Internship Objectives

- Experiment with existing 3D models in VR to develop a prototype of an immersive experience.
- Explore and implement ideas for user movement/locomotion methods (e.g., walking, teleporting) and interactions in virtual environments and immersive experiences.

Expected Deliverables

- A prototype of a VR immersive experience in the Nicosia Buffer Zone
- Report on locomotion methods and user interactions

5. DEVELOPMENT OF EDUCATIONAL APPLICATIONS AND GAMES USING XR TECHNOLOGIES

Description of Internship

The intern(s) will assist in developing educational games and applications for children, using XR technologies.

Required Skills

- A background in Computer Science or related field.
- Experience with XR technologies or game engines.
- Good communication skills.

Internship Objectives

Develop educational games and activities using XR technologies like VR.

Expected Deliverables

Educational games with interactions in XR

SMART NETWORKED SYSTEMS (SNS) RESEARCH GROUP

1. CREATION OF A PLATFORM TO MAINTAIN AND VISUALIZE INFORMATION ABOUT TREES IN URBAN ENVIRONMENTS

Description of Internship

The internship will work with the rest of the CYENS team in creating a platform that collects information about existing and new tree plantings in the city of Nicosia (part of it similar to AthensTrees)

Required Skills

- Proficiency in any Server Side language (C#, Java, Ruby, Python)
- Knowledge of Front-end JavaScript
- Knowledge of SQL and NoSQL Databases (familiarity with Redis, RabbitMQ/Kafka, Elasticsearch will be an advantage)
- Experience building elastic, scalable APIs / microservices is a plus

Internship Objectives

Contribute to the creation of the platform

Expected Deliverables

Software Module

2. URBAN HEAT INDEX MODULE FOR THE INICOSIA DIGITAL TWIN

Description of Internship

Assist in the design and development of the UHI analysis/simulation module for the iNicosia Digital Twin based on requirements from the METACITIES project. This will involve interaction with the CYENS SW Dev. team and other partners of the project to collect needs, analyze them, design the solution and assist in implementing it.

Required Skills

- Knowledge of HTML/CSS
- JavaScript
- Python
- RESTful APIs/Services

Internship Objectives

UHI analysis/simulation module for the iNicosia Digital Twin based on requirements from the METACITIES project.

Expected Deliverables

Software Module

1. APPLYING AI TECHNIQUES TO PERFORM LAND COVER AND LAND USE MAPPING VIA REMOTE SENSING

Description of Internship

Land cover and land use mapping is a critical process for understanding how the Earth's surface is utilized and how it changes over time. It involves classifying different types of land surfaces (e.g., forests, urban areas, water bodies, and agricultural fields) and identifying the human activities associated with them. Remote sensing, which uses satellite and aerial imagery to observe the Earth from above, has revolutionized this field by providing large-scale, up-to-date data.

In recent years, Artificial Intelligence (AI) techniques—particularly machine learning and deep learning—have significantly enhanced the accuracy and efficiency of land cover and land use mapping. AI models can analyze complex patterns in remote sensing imagery, automatically distinguishing between different land types with greater precision than traditional methods. For example, Convolutional Neural Networks (CNNs) excel in image analysis, enabling the detection of subtle differences in vegetation, urban expansion, or deforestation.

These AI-driven systems can process vast datasets from satellites like Sentinel and Landsat, enabling more frequent and detailed monitoring of land changes. The information derived is crucial for environmental management, urban planning, agriculture, and assessing the impacts of climate change. By leveraging AI, mapping becomes faster, more consistent, and capable of capturing dynamic changes in land use with high accuracy, supporting both local authorities and global environmental initiatives.

Required Skills

- Deep learning
- AI

Internship Objectives

To map the land cover and land use of the geographical area of Cyprus by employing state-of-art deep learning techniques

Expected Deliverables

A GIS land cover and land use map of the geographical area of the Republic of Cyprus.

VISUAL COMPUTING RESEARCH GROUP

1. ACCELERATING NEURAL GARMENT SIMULATION FOR REAL-TIME VIRTUAL TRY-ON APPLICATIONS

Description of Internship

This internship focuses on optimizing neural garment simulation techniques for real-time virtual try-on applications. While state-of-the-art approaches like HOOD and ContourCraft have made significant progress in garment simulation, they still face performance bottlenecks in scenarios requiring instant feedback. The intern will investigate novel optimization strategies, architectural improvements, and potential hybrid approaches combining traditional physics-based and neural simulation methods to achieve real-time performance without sacrificing visual fidelity. The project will specifically target scenarios where customers upload a photo, have their 3D avatar generated within seconds, and expect immediate garment visualization and interaction.

Required Skills

- Strong programming skills in Python and C++
- Experience with deep learning frameworks (PyTorch or TensorFlow)
- Background in computer graphics, physics simulation, or computer vision
- Familiarity with 3D modeling concepts and mesh processing
- Knowledge of optimization techniques for neural networks
- Experience with real-time rendering systems (desirable)
- Basic understanding of garment physics or cloth simulation (desirable)

Internship Objectives

- Analyse performance bottlenecks in current neural garment simulators
- Implement and evaluate at least two optimization approaches for accelerating simulation
- Develop a prototype demonstrating faster garment rendering on avatars
- Benchmark performance against existing solutions in terms of speed and visual quality
- Document findings on the tradeoffs between simulation quality and performance

Expected Deliverables

- Technical report analysing current limitations in neural garment simulation
- Optimized implementation of a neural garment simulator with improved runtime performance
- Simple demonstration application showcasing the accelerated simulation on example avatars
- Performance benchmarks comparing the solution to existing approaches
- Final presentation of findings and recommendations for future work

2. SEMANTIC 3D SEGMENTATION FOR SCENE UNDERSTANDING

Description of Internship

Semantic 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 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.

Required Skills

- Basic knowledge of computer vision and deep learning
- Programming skills: Python, TensorFlow (optional), PyTorch (optional)

Internship Objectives

The scientific objectives of the project span a range of topics from these research areas, including data collection, neural networks training, evaluation, and application development, with the final goal to develop a novel deep learning architecture for semantic 3D segmentation, composed of deep neural networks for segmenting and labelling real-world objects and scenes.

Expected Deliverables

- Final report
- Source code
- Trained models

3. BUILDINGNET: LEARNING TO LABEL 3D BUILDINGS

Description of Internship

BuildingNet is a large-scale dataset of annotated 3D building models whose exteriors and surroundings are consistently labeled. The dataset provides 513K annotated mesh primitives, grouped into 292K semantic part components, across 2K building models. The dataset covers several building categories, such as houses, churches, skyscrapers, town halls, libraries, and castles. Two tracks are included in our benchmark. In the first track, called "BuildingNet-Mesh", algorithms can access the mesh data, including subgroups, thus leveraging pre-existing mesh structure common in 3D building models. The algorithms are evaluated in two conditions: when the RGB texture is available, and when it is not. In the second condition, algorithms must label the building using only geometric information. The second track, called "BuildingNet-Points", is designed for large-scale point-based processing algorithms that must deal with unstructured point cloud data without access to mesh structure or subgroups. This dataset is a joint work between UMass, CYENS (Visual Computing Group), and Adobe Research.

Required Skills

- Basic knowledge of computer vision and deep learning
- Programming skills: Python, TensorFlow (optional), PyTorch (optional)

Internship Objectives

The internship involves evaluating existing 3D semantic segmentation deep learning-based methods on the BuildingNet benchmarks and contributing towards a novel Graph Neural Network architecture, that can exploit the spatial and structural relations between the geometric primitives that compose a 3D building.

Expected Deliverables

- Final report
- Source code
- Trained models

1. INTERACTIVE VIRTUAL REALITY APPLICATIONS TO SUPPORT WORKERS WITH DISABILITIES

Description of Internship

This project aims to investigate how immersive Virtual Reality applications can be used to raise awareness and support the integration of workers with disabilities in working spaces. As part of this project interns are expected to design, develop, and evaluate an interactive VR prototype application that demonstrates different types of problems faced by people with disabilities in working spaces. The VR application will incorporate AI techniques to enhance the user experience/interaction.

Required Skills

Interns working on this project should have technical and/or creative skills that include:

- Application development using dedicated game engines (i.e. UNITY3D or UnReal Engine)
- Computer Programming skills

Internship Objectives

- To review the literature regarding the use of VR for raining awareness/empathy for people with disabilities
- To design, develop, and implement an AI-empowered VR application for raising awareness for problems faced by disabled people in working spaces
- To publish/present the work at a related local/international conference

Expected Deliverables

- VR Application
- Conference article describing the work done

COGNITIVE ARTIFICIAL INTELLIGENCE AND ROBOTICS RESEARCH GROUP

1. AI INTERACTIVE STORYTELLER PLATFORM

Description of Internship

The goal of this project is to advance our Artificial Intelligence (AI) Interactive Storyteller prototype. AI Interactive Storyteller uses generative AI technologies such as large language models (LLMs) for creating coherent and engaging stories, text2image models for generating images and text2speech models for narrating the story.

Required Skills

- Strong software engineering skills (full-stack)
- Knowledge of React will be considered an advantage
- Experience with AI models will be considered an advantage

Internship Objectives

- Develop the backend of the platform
- Develop appropriate user interfaces for the different use cases considered (will be defined at the start of the internship)

Expected Deliverables

- Source code
- Internship report

1. AI FOR AERIAL MARITIME SURVEILLANCE

Description of Internship

Maritime surveillance and pollution control are critical challenges in coastal regions, particularly in areas with high traffic and industrial activity. The Integrated Robotic System for Advanced Inspection (IRSAI) is a project funded by the Cyprus Research and Innovation Foundation (RIF) that aims to develop a novel multi-agent approach for maritime surveillance and pollution monitoring. To address the growing environmental challenges associated with increased maritime activity, IRSAI integrates three key technologies: (1) SkyBot, an AI-enhanced drone system utilizing computer vision for automated vessel and pollution detection; (2) SeaBot, an agile unmanned surface vehicle capable of autonomous navigation, water sampling, and oil detection; and (3) an Origin and Destination Forecaster that employs real-time telemetry and hydrodynamic modeling to predict pollutant trajectories. The DeepCamera group at CYENS is leading the development of SkyBot, focusing on training deep learning (DL)-based object detection models for aerial vessel and spill identification. We are also integrating the models into SkyBot via DJI's dedicated FlightHub 2 platform and developing the system's web interface and cloud server. The intern will closely work with the group and contribute to these activities.

Required Skills

- Good programming skills in Python
- Experience in deep learning and/or computer vision
- Familiarity with the principles of object-oriented programming will be considered an advantage
- Experience with Web API Frameworks (e.g. FastAPI, Flask) will be considered an advantage

Internship Objectives

- Curate visual (RGB) and thermal video datasets obtained by SkyBot
- Label extracted video frames using an open-source software (CVAT)
- Integrate the trained model in SkyBot's cloud-based solution via a custom API service

Expected Deliverables

- A labelled dataset for DL model training and testing
- Integration of the model
- A final report at the end of the internship

VIDEOMICS RESEARCH GROUP

1. ADAPTIVE 360O VIDEO STREAMING SIMULATIONS & EMULATIONS

Description of Internship

Adaptive video encoding can be formulated as a multi-objective optimization process where video quality, bitrate demands, and encoding rate are jointly optimized, going beyond the standard video encoding approaches that focus on rate control targeting specific bandwidths. The latter approach is applicable for industry-level adaptive video streaming solutions.

The internship will use a python implementation of the afore-described approach and examine the use of different:

- Video codecs (i.e., H.267, VVC, AV1, HEVC, H.264) to verify the codec-agnostic nature of the employed algorithms
- Video quality assessment metrics (i.e., PSNR, SSIM, VMAF)
- 3G/4G/5G network traces to simulate the adaptation efficacy of the approach in a variety of real-time video communication scenarios
- Buffer fullness algorithms to showcase the applicability of the methods over various industry implementation setups

Required Skills

- Good Programming Skills (Python and Bash Scripting for implementation; optional C and C++ for logic comprehension)
- Basic understanding of Image/ Video processing
- Basic understanding of Statistics and Linear Regression
- Basic understanding of Machine Learning Algorithms

Internship Objectives

Gain a hands-on understanding on adaptive 360o video streaming.

Expected Deliverables

5-page double-column IEEE-style report.

2. COMPARATIVE PERFORMANCE EVALUATION OF VIDEO CODECS FOR 360O VIDEOS

Description of Internship

Adaptive video streaming for 360o videos is much more computationally demanding and bandwidth-hungry than traditional 2D videos.

The internship will compare:

- Currently standardized H.267, recently standardized H.266 (VVC) and AV1 as well as earlier H.265 (HEVC) video codecs and examine their performance in terms of encoding complexity, bandwidth demands, and video quality.
- Objective video quality assessment will leverage PSNR and VMAF metrics.
- Subjective video quality assessment experiments of >10 participants will be further scheduled (optional).
- Open-source 360o video datasets will be used.
- The implementation philosophy and source-code implementation guidelines will be provided.

Required Skills

- Good Programming Skills (Python and Bash Scripting for implementation; optional C and C++ for logic comprehension)
- Basic understanding of Image/ Video processing
- Basic understanding of Machine Learning Algorithms

Internship Objectives

Gain a hands-on understanding on video compression standards for 360o video coding.

Expected Deliverables

5-page double-column IEEE-style format.

3. COLLABORATIVE ROBOTIC VISION TECHNOLOGIES FOR INDOOR SPACES APPLICATIONS

Description of Internship

Robotic vision can be used for a diverse set of tasks ranging from safe and autonomous navigation, to localization, and floor mapping, among others.

The internship will investigate best-practise setups involving collaborative robotic vision technologies for applications such as floor mapping and object detection and characterization. The idea is that fusing views coming from different robots and hence angles can provide a more accurate prediction of the objects in the robots' field of view.

The internship is jointly given with the Robotic Lab of the University of Cyprus: https://robolab.ucy.ac.cy/

Required Skills

- Good Programming Skills (Python, C, C++)
- Basic understanding of Image/ Video processing
- Basic understanding of Machine Learning Algorithms
- Basic understanding of Robot Operating System (ROS)

Internship Objectives

Hands on knowledge on collaborative robot tasks.

Expected Deliverables

5-page double-column IEEE-style report.

4. ADVANCING ECHOCARDIOGRAPHIC PRACTICES IN THE ICU: THE ROLE OF ARTIFICIAL INTELLIGENCE

Description of Internship

- Collaborate with VIDEOMICS, eHealthLab of the Cyprus University of Technology, and Nicosia General Hospital ICU researchers to conduct a scoping review on the internship's topic
- Document open-source datasets, end-to-end pipelines, and models related to AI-assisted echocardiography in the intensive care unit
- Investigate setting up a working prototype for echocardiography video analysis

Required Skills

- Good Programming Skills (Python, C, C++)
- Good understanding of Image/ Video processing
- Good understanding of Machine Learning Algorithms

Internship Objectives

Gain an in depth understanding of the state-of-the-art approaches used in AI-assisted echocardiography in the ICU

Expected Deliverables

5-page double-column IEEE style report and software prototype if applicable.