

# Alexandre Symeonidis-Herzig

📍 Guildford, GB  
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## Summary

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PhD researcher applying machine learning to real-world problems in computer vision, 3D graphics, and human motion synthesis. Experienced in developing end-to-end deep learning systems, from multi-view data capture and preprocessing to model training and evaluation. Focused on generative modeling and building people-centered AI for communication and expression.

## Education

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**University of Surrey** *Guildford, GB*  
*PhD in Computer Vision* *Sept 2023 – present*  
 ◦ Thesis Working Title: Translation and Production of Non-Manual Features for Sign Language

**University of Surrey** *Guildford, GB*  
*BEng (Hons) in Electronic Engineering* *Sept 2019 – June 2023*  
 ◦ Graduated with First Class Honours  
 ◦ Computer Vision  
 ◦ Computer Graphics  
 ◦ C++ and Object-Oriented Design  
 ◦ Computer Algorithms and Architecture

## Experience

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**Graduate Teaching Assistant** *Guildford, GB*  
*University of Surrey* *Sept 2023 – present*  
 Part of the team delivering labs for CS and EEE courses, providing lab instruction and technical mentoring.  
 ◦ Covered COM1031 (Computer Logic), EEE1035 (C Programming), EEE2048 (Algorithms)  
 ◦ Completed GTA training to enhance teaching, feedback, and teamwork skills

**Summer Research Intern** *Guildford, GB*  
*University of Surrey* *June 2022 – Sept 2022*  
 Research on multi-agent reinforcement learning strategies for UAV access control, with a focus on reproducibility and model efficiency.  
 ◦ Reimplemented baselines from Matlab to PyTorch for reproducible experimentation and up to 50% faster training  
 ◦ Designed and trained deep policy networks using DQN  
 ◦ Evaluated agent coordination strategies in simulated environments

**Associate Development Engineer** *London, GB*  
*Sky Group* *June 2021 – June 2022*  
 Collaborated with an agile engineering team to develop computer vision tools for automated set-top box validation, integrating OCR pipelines into production workflows.  
 ◦ Built OCR pipelines for detecting on-screen text and anomalies in video streams  
 ◦ Deployed computer vision tools for regression testing in content validation workflows  
 ◦ Refactored legacy systems from Python 2 to Python 3, improving stability and maintainability  
 ◦ Worked within an agile scrum framework, managing project tasks with Jira and participating in daily stand-ups

## Publications

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**VisualSpeaker: Visually-Guided 3D Avatar Lip Synthesis** July 2025  
 Alexandre Symeonidis-Herzig, Ozge Mercanoglu Sincan, Richard Bowden  
[arxiv.org/abs/2507.06060](https://arxiv.org/abs/2507.06060) ([Accepted ICCV Workshop] arXiv preprint)

## Projects

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### **PokerGym: Multi-Agent Poker Environment**

*May 2025 – Aug 2025*

- Built a custom Texas Hold'em environment for studying multi-agent reinforcement learning using PPO and legal action masking.
- Developed fully custom multi-agent environment using PettingZoo's AECEnv API and Gymnasium integration
- Implemented full training pipeline using Proximal Policy Optimization (PPO), including reward tracking and action masking
- Simulated realistic betting, turn-taking, and side-pot resolution to support advanced strategy learning
- Designed for reproducibility and extensibility in research workflows

### **Volumetric Sign Capture System**

*Sept 2023 – Sept 2024*

- Developed a low-cost scalable multi-camera volumetric capture rig for multi-view sign language datasets.
- Designed hardware using Raspberry Pis and high-quality cameras
- Built camera synchronization modules and custom control software
- System supports multi-view capture for dataset creation used in training facial motion synthesis models

### **Marker-less Motion Capture for Signing Avatar**

*Sept 2022 – June 2023*

- Undergraduate thesis project to animate a photorealistic signing avatar from monocular video.
- Built a pipeline combining MediaPipe, custom uplift network, and Unreal Engine Metahumans
- Demonstrated real-time signing avatar driven from monocular video

## Skills

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**Programming Languages & Frameworks:** Python, PyTorch, OpenCV

**Tools:** Docker, Git, LaTeX, Weights & Biases, Linux, SLURM

**Specialized:** Computer Vision, 3D Graphics, Sign Language Production

**Languages:** English (Fluent), Greek (Proficient), German (Proficient), Dutch (Proficient)

## References

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**Upon Request:** Available upon request from supervisors and colleagues

## Volunteer

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### **Societies Chair**

*University of Surrey Students' Union*

*Guildford, GB*

*Sept 2023 – June 2024*

Oversaw the Student's Union societies, supporting over 150 student-led groups and leading monthly meetings.

### **Committee Member / Founder**

*University of Surrey Societies*

Founded GameDev Society; held leadership roles in GameSoc and EARS (Electronics and Amateur Radio Society) societies.