Hamid Gadirov

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RESEARCH & PROJECTS

University of California, Davis, Davis, USA — *Visiting Researcher* May - Dec 2024

- Research project: Hypernetworks and stable diffusion for **3D flow estimation and reconstruction** for scientific ensemble datasets — *Python, PyTorch, OpenCV, Deep Work*
  - **EuroVis 2025** accepted paper — HyperFLINT: Hypernetwork-based Flow Estimation and Temporal Interpolation for Scientific Ensemble Visualization

University of Groningen, Groningen, Netherlands — *Doctoral Researcher* Mar 2021 - Present

- Research project: Machine Learning for Scientific Visualization
  - 2D and 3D (un-)supervised **optical and physical flow estimation** for interpolation
  - Medical image **registration and classification** using learning-based optical flow
  - Learning-based **volume rendering time prediction**
  - Autoencoder-based (AE, (β-)VAE, WAE) **feature extraction** for DR and clustering
  - *Python, PyTorch, TensorFlow, OpenCV, OpenGL, C++, Clean Code, Linux*
  - **ISVC 2021 paper** (Springer): Evaluation and Selection of Autoencoders for Expressive Dimensionality Reduction of Spatial Ensembles (H. Gadirov, et al.)
  - **IEEE VIS 2022** Doctoral Colloquium: proposed dissertation work presentation
  - **TVCG** submitted paper — FLINT: Learning-based Flow Estimation and Temporal Interpolation for Scientific Ensemble Visualization (H. Gadirov, et al.)
  - **Eurographics 2025** submitted paper — Learning-based Volume Rendering Time Prediction

University of Stuttgart, Stuttgart, Germany

- *Master Thesis Student* at the Visualization Research Center (VISUS) Jan - Sep 2020
  - Autoencoder-based Feature Extraction for Ensemble Visualization
  - *Python, Keras, TensorFlow, Scikit-learn*
  - **Deep learning**-based clustering of images from scientific ensemble datasets
- *Research Assistant* at VISUS May 2020 - Jan 2021
  - Developed metrics and performed a study for volume rendering quality assessment
  - *Vue, React, Angular, Github+Heroku, Amazon MTurk, OpenCV, WebGL*
- *Teaching Assistant* at the Institute for Natural Language Processing Oct 2019 - Feb 2020
  - Deep Learning for Speech and Language Processing – Visual Question Answering
- *Trainee Student* at Machine Learning & Robotics Lab Apr 2019 - Jul 2019
  - Object detection, tracking, grasping – *C++, Python, OpenCV, ROS, Git*
  - Tic-tac-toe game with the robot Baxter

CanSat competition (NASA), Texas, USA — *Software Engineer, Team Leader* Jan - Jun 2017

- Developed software for acquiring data from a satellite and transmitting to a ground station
  - *C/C++, Git* — 13th place worldwide

CERN, Meyrin, Switzerland — *Summer Student* Jun - Aug 2016

- Project: "Container technology for the Upgrade of the ATLAS Trigger and Data Acquisition"
  - *Scientific Linux, Docker, ATLAS TDAQ software, C++, Bash*
  - Confirmed that Docker containerization can be used for the TDAQ system

EDUCATION

University of Groningen, Groningen, the Netherlands

- Ph.D. in Computer Science — Mar 2021 - Present
  - Paper reviews: EuroVis 2021, IEEE VIS 2022, IEEE VIS 2023, TVCG 2024, SIBGRAPI 2024 (2 papers), JDSSV 2024 (2 reviews)
  - Supervision of bachelor and master projects in autoencoder-based anomaly detection, dimension reduction, and (semi-supervised) clustering
  - Teaching Assistant for the Scientific Visualization graduate course (240 students)
    - added Deep Learning-based dimension reduction project to the labs
  - Kaggle competition: Cell Instance Segmentation

University of Stuttgart, Stuttgart, Germany

- M.Sc. in Computer Science — Oct 2017 - Sep 2020
  - Specialization: Autonomous Systems, GPA: 1.8 (1.0 best, 4.0 pass)
  - Relevant Courses: Master Thesis (1.3), Deep Learning (1.0), Computer Vision (1.7), Practical Robotics (1.0), Advanced Seminar (1.3), Maths for Intelligent Systems (2.0)

National Aviation Academy, Faculty of Physics and Technology, Baku, Azerbaijan

- B.Sc. in Computer Engineering — Sep 2013 – Jul 2017
  - Graduated with Honors and a GPA of 97%
  - Student conferences: "Creating C++ learning hypermedia software" (Apr 2015); "Calculating characteristics of distribution circuits channels in cellular communication networks" (Feb 2016)
  - 1st place in the university programming contest (C++) (Mar 2017)

LANGUAGES

- Azerbaijani, Russian: Native
- English: Fluent
- Dutch: Intermediate
- German: Intermediate

SCHOLARSHIPS & AWARDS

- DAAD (German Academic Exchange Service) Scholarship — Oct 2017 - Nov 2019
  - Study grant for master's studies. One of 11 awardees from Azerbaijan (over 1000 applications)
- Azerbaijan Government Scholarship — Oct 2013 - Jul 2017
  - For the best results in the bachelor's entrance exam

VOLUNTEERING

- IEEE VIS 2022 — Oklahoma City, USA (Hybrid), Oct 15 - 21
  - Student Volunteer at the premier forum for advances in visualization and visual
- EuroVis 2022 — Rome, Italy, Jun 13 - 17
  - Student Volunteer at the 24th Eurographics Conference on Visualization
- DAAD Freundeskreis Stuttgart — Dec 2020 - Present
  - Organization of cultural events for DAAD scholarship holders

HOBBIES

When I am not doing my research, I prefer to do lots of sports. I like climbing, karate, swimming, windsurfing, tennis, hiking. In summer I climb the mountains, and in winter I ski down from them.