

# Davit Soselia

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College Park, MD | [GitHub](#) | [Scholar](#)

## SKILLS

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Programming and Scripting Languages: (Proficient) Python, C++, SQL (Familiar) JS, Swift, Java, C#. Frameworks: PyTorch, TensorFlow, Transformers, Jax, OpenCV, Megatron-LM, Lit-LLaMA. Platforms&Tools: Hadoop, Spark, Git, Slurm, AWS, Docker, Kubernetes, Azure, Xcode.

## RECENT PROJECT

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### **ChartAgent: Scaling Inference of Chart Generation, Editing, and Reasoning on Large Multimodal Models (Under Submission)**

Proposed ChartAgent that can address challenging chart-related tasks such as image-to-chart reconstruction, editing, and reasoning. ChartAgent adopts a human-like strategy and performs multi-step interactions with a chart across multiple modalities to achieve the final result. Performed extensive evaluations through human study, fine-tuned reward model, and general VLM evaluation, and found that ChartAgent leads to significant improvements across both open and closed models with no additional fine-tuning.

## EDUCATION

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### **Doctor of Philosophy:** Computer Science

University of Maryland | College Park, Maryland | May 2027 (Expected)

- 3.75 GPA

### **Bachelor of Science:** Computer Engineering

San Diego State University | San Diego, California | May 2019

- 4.00 GPA

## EXPERIENCE

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### **Research Scientist Intern**

Adobe Inc. | College Park, Maryland | May 2024 - Aug 2024

Fine-tuned and modified Phi-3-Vision model to allow powerpoint and open office slides reconstruction images and PDFs. Collected a large dataset of 20 million source code samples, and the resulting trained model is capable of performing many helpful tasks such as understanding and editing slides at source code level drastically reducing presentation creation time.

## Research Engineer

KTH Royal Institute of Technology | Stockholm, Sweden | Aug 2020 - Jun 2022 (Intermittent)

- Developed a Python library for Lower-limb Joint Torque Prediction from EMG time-series data in TensorFlow.
- Accelerated a robotic arm's object orientation detection module by 230% through the implementation of TensorRT and optimization of the OpenCV pipeline in C++.

## Co-founder, Machine Learning Engineer

Arkus AI | Stockholm, Sweden | Jun 2020 - May 2022

- Developed an image processing pipeline for faster chromosome analysis, which decreased the time spent on karyotyping by 30%. Utilized OpenCV for initial segmentation and U-net for precise segmentation, greatly enhancing the efficiency of the process.
- Built pipelines for data versioning, model training and deployment in AWS.
- Developed an interactive React web application and trained models to assist genetic counselors in constructing pedigree trees, evaluating associated risks, and generating comprehensive reports for users.

## Software Engineer

Airo | Tbilisi, Georgia | Aug 2018 - April 2020

- Developed visual classification pipeline and implemented corresponding UI in iOS and android apps, automate part of the insurance signup process, saving hundreds of hours of manual review.
- Redesigned customer data processing pipeline by extracting information from PDF using Tesseract and moved the pipeline to AWS, oriented around Amazon Redshift, thus increasing data availability and accessibility for data science and machine learning tasks.

## PAPERS

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L. Chen, C. Zhu, J. Chen, **D. Soselia**, T. Zhou, T. Goldstein, H. Huang, M. Shoeybi, B. Catanzaro (Jul, 2024), ODIN: Disentangled Reward Mitigates Hacking in RLHF, ICML 2024.

**D. Soselia**, K. Saifullah, T. Zhou (2023), Vision-Code Transformer for Screenshot-to-HTML/CSS Generation, T4V@CVPR2023.

L. Zhang, **D. Soselia**, R. Wang, E. Farewik (Sep, 2023), Estimation of Joint Torque by EMG-driven Neuromusculoskeletal Models and LSTM Networks, IEEE Transactions on Neural Systems and Rehabilitation Engineering.

L. Zhang, **D. Soselia**, R. Wang (Mar, 2022), Lower-limb Joint Torque Prediction using LSTM Neural Networks and Transfer Learning, IEEE Transactions on Neural Systems and Rehabilitation Engineering.

C. Paolini, **D. Soselia**, H. Baweja, M.Sarkar (Dec, 2019), Optimal Location for Fall Detection Edge Inferencing, IEEE Globecom2019.

**D. Soselia**, L. Shugliashvili, I. Koberidze, S.Amashukeli, S. Jjavadze, G. Chelidze (Dec, 2018), Freezing Networks: Weight Preservation Procedure for Continual Learning, NeurIPS 18 Workshop on Continual Learning.

**D. Soselia**, M. Tsintsadze, L. Shugliashvili, I. Koberidze, S.Amashukeli, S. Jjavadze (Nov, 2018), On Georgian Handwritten Character Recognition, IFAC-PapersOnLine 51.30 (2018): 161-165.