Asha Anoosheh

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Education

ETH Zürich — Graduated 2018
Master of Science, Robotics (specialization in Computer Vision and Learning) — *GPA: 5.43 / 6*

University of California, Berkeley — Graduated 2016 – Dean's Honors
Bachelor of Science, Computer Science & Electrical Engineering — *GPA: 3.74 / 4*

Work Experience

NNAISENSE – Lugano, Switzerland — *Research Scientist* (Feb 2019 – present)

- Project lead: TBA Visual Inspection Platform
  - Upcoming AI-as-a-Service cloud system for visual defectoscopy in industrial settings
  - Allows customers to use own data to create datasets, train models, and do inference in the cloud
  - Created entirety of backend library, soon to be deployed on AWS Marketplace
- Project lead: Collaboration with Sulzer-&-Schmid Laboratories
  - Start-to-finish project to automate the detection of defects and damages on wind turbine blades
  - From project design, dataset adjustment, and POC to model tuning, deployment, and online upgrades
  - Packaging solutions for customers as Docker containers accessible on cloud compute providers
- Researcher: Collaboration with Festo A.G.
  - Project to create an AI-powered object-manipulation controller for the BionicSoftHand
  - Digital-Twin modeling of physical dynamics using pneumatic readings and/or 3D camera data
  - Object position/rotation localization from pure vision using simulated data plus sim-to-real transfer
- Other:
  - Co-authored (CVPR 2020) Zero-shot Style Transfer technique using latent-space recombination
  - Co-authored (NeurIPS W.I.B. 2020) DVS Camera event processing technique using Neural ODEs
  - Dataset curation from scratch for designing a grasping system for various types of objects
  - Anomaly detection for industrial use cases using real/synthetic-hybrid data augmentation

Google / Nest – Palo Alto, CA — *Software Engineering Intern* (May 2015 – Aug 2015)

- Created backend for an internal tool for automating mobile app UI alteration and exploration
- Helped develop a page-object framework for self-navigating Android, iOS, and web applications

NVIDIA – Santa Clara, CA — *Software Engineering Intern* (May 2014 – Aug 2014)

- Worked on Android Platform Team to customize, debug, and add features to AOSP framework for Nvidia devices
- Implemented dynamic region-based package management and customized filesystem for external storage
- Assembled a custom Android file manager, generalized for future personalization

Intertrust Technologies – Sunnyvale, CA — *Software Engineering Intern* (Jun 2013 – Aug 2013)

- Developed an NFC security library and application on Android platform for internal company projects
- Implemented front-end cloud storage data transfer used by the Kabuto collaboration platform

Research Experience

**** Publications ****

1. Giorgio Giannone, **A. Anoosheh**, Alessio Quaglino, Pierluca D'Oro, Marco Gallieri, Jonathan Masci. Real-time Classification from Short Event-Camera Streams using Input-filtering Neural ODEs.

Present in NeurIPS 2020 W.I.B. (link)

2. Jan Svoboda, **A. Anoosheh**, Christian Osendorfer, Jonathan Masci. Two-Stage Peer-Regularized Feature Recombination for Arbitrary Image Style Transfer.
   Present in CVPR 2020 (link)
3. **A. Anoosheh**, T. Sattler, R. Timofte, M. Pollefeys, L. Van Gool. Night-to-Day Image Translation for Retrieval-based Localization.
   Present in ICRA 2019 (link)
4. **A. Anoosheh**, E. Agustsson, R. Timofte, L. Van Gool. ComboGAN: Unrestrained Scalability for Image Domain Translation.
   Present in ICLR 2018 and CVPR 2018 (link)
5. N.M. Ho, E. Manogaran, W.F. Wong, **A. Anoosheh**. Efficient floating-point precision tuning for approximate computing.
   Published in ASP-DAC 2017 (link)

ETH Computer Vision Laboratory (Sep 2017 – Sept 2018)

- ❖ Thesis: Improve localization for autonomous vehicles in difficult lighting conditions using image translation
- ❖ Lead experiment to efficiently translate among multiple image domains using generative-adversarial models

ETH Computer Vision & Geometry Group (Nov 2016 – May 2017)

- ❖ Estimating restricted motion of non-static objects from multiple 3D point-clouds in dynamic scenes

International Computer Science Institute (Feb 2016 – Sep 2016)

- ❖ Experimented effectiveness of complex-valued neural networks on fMRI reconstruction and SAR identification
- ❖ Created a visual question-answering algorithm for quantifying symmetry in images

Self-Motivated Research (Aug 2015 – Jul 2016)

- ❖ Exploring use of Deep Q-Learning for autonomous vehicle control using visually-rich driving simulation
- ❖ Authored a paper on the speedup of distributed neural nets via IPC compression
- ❖ Implemented the Graph Neural Network (Scarselli '09) in Torch for use in traffic prediction

Berkeley Institute for Data Science (Jan 2015 – Jan 2016)

- ❖ Performed web scraping, storage, analysis, and learning of textual and image data from specific commodities

National University of Singapore (Aug 2014 – Dec 2014)

- ❖ Research approximate computing using floating-point precision tuning and its effects on FPGA performance

Skills & Knowledge

- Languages: Python, C++, C, Java, CUDA, OpenCL, Ruby, JavaScript, R, SQL
- Frameworks: PyTorch, Tensorflow, Caffe, H2O, Spark, Hadoop, OpenMP, Node.JS
- Software: Docker, AWS/Azure (Sagemaker, Lambda, Batch, ACI), Git, MATLAB, Multisim
- Mathematics: Multivariable Calculus, Linear Algebra, Differential Equations, Discrete Math, Combinatorics
- Electrical Engineering: Microelectronic Circuits, Signals & Systems, Convex Optimization
- Physics: Astrophysics, Quantum Mechanics, Relativity, Kinematics, E&M, Optics

Relevant Courses and Projects

Machine Learning:

Statistical Learning Theory (2017)

- Information Theory, Variational Methods, Gibbs Distribution, MCMC, Validation Theory, Annealing, Mean-fields

Natural Language Understanding (2017)

- Built an LSTM-based conversational agent as class project, adding a bidirectional, dynamic encoder and attention

Deep Learning (2017)

- Function approximation theory, Subspace-partitioning, RNNs, Factor models, Undirected Graphical Models

Advanced Topics in Machine Learning (2016)

- Variational nets, Combinatorial & Strategic optimization, Riemannian manifolds, Deep-RL, Bandits, Causality

Machine Learning (2015)

- Implemented Linear/Logistic Regression, kernel methods, PCA, Neural Nets, unsupervised and scalable learning

Artificial Intelligence (2015)

- Implemented CSPs, MDPs, RL, Bayes Nets, GMM, HMMs, Decision Trees, Minimax, and SVMs in projects

Computer Vision and Image Processing:

Vision for Mobile Robotics (2016)

- Built a Visual-Odometry pipeline from scratch, utilizing monocular SFM for KITTI driving data

Computational Regularity (2016)

- Group Theory, Symmetries, detection, and completed a custom project quantifying semantic symmetry

Traditional Computer Vision (2016)

- Performed transformations, feature extraction, tracking, segmentation, model-fitting, & multi-view reconstruction

Modern Computer Vision (2016)

- Devised CNN-based optimization for morphing images based on classification as custom project

Image Manipulation and Computational Photography (2015)

- Assembled a pipeline for processing and identifying new supernovae using the KAIT telescope (Custom project)

Robotics:

Theory of Robotics and Mechatronics (2016)

- Screw Theory, Forward/Inverse Kinematics, Jacobian, Force Control, Trajectory Generation, Micro/Nanorobotics

Rehabilitation Engineering (2017)

- Actuators and sensors, Human motor system, Exoprosthesis, Orthotics, Robot-aided therapy, Neuroprosthetics

Virtual Reality (2017)

Computer Science:

Computer Graphics (2016)

- Created a General-Relativistic raytracing program (for black holes) as custom project

Parallel Computing and Software (2015)

- Initiated a custom project which successfully sped up large-scale distributed neural-nets via IPC reduction

Computer Security (2015)
Efficient Algorithms and Intractable Problems (2014)
Operating Systems and Systems Programming (2014)
Database Systems (2014)
Computer Architecture (2013)
Data Structures and Interpretation of Programs (2012)