Asha Anoosheh

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Education

ETH Zurich — Graduation expected Spring 2018
Master's of Science, Robotics

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

Research Experience

ETH Computer Vision Laboratory (Sep 2017 – present)
- ❖ Leading experiment to efficiently transfer between multiple data domains using adversarial models

ETH Computer Vision & Geometry Group (Nov 2016 – May 2017)
- ❖ Collaborating as research assistant to estimate restricted motion of objects from multiple 3D point-clouds

International Computer Science Institute (Feb – Sep 2016)
- ❖ Experimented effectiveness of complex-valued neural networks on fMRI reconstruction and SAR identification
- ❖ Devised 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 – Dec 2014)
- ❖ Research approximate computing using floating-point precision tuning and its effects on FPGA performance
- ❖ Published in ASP-DAC 2017 (link)

Work Experience

Google / Nest – Palo Alto, CA — *Software Engineering Intern* (May – 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 – 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 – Aug 2013)
- ➢ Developed an NFC security library and application on Android platform for internal company projects
- ➢ Implemented front-end procedure for cloud storage data transfer used by the Kabuto collaboration platform

Skills & Knowledge

- *Languages*: C, Python, Java, C++, CUDA, OpenCL, Ruby, Lua, Scala, JavaScript, R, SQL
- *Software*: Tensorflow, Caffe, Torch/PyTorch, H2O, Spark, Hadoop, OpenMP, MATLAB, Multisim, Node
- *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
- *Other:* Fluent in Farsi with basic knowledge of French & German; BSA Eagle Scout 2011

Relevant Courses and Projects

Deep Learning (2017)
- Function approximation theory, NN-optimization, RNNs, Factor models, Undirected Graphical Models

Natural Language Understanding (2017)
- Entity-Linking, Speech recog., Grammars, Information Retrieval, Neural models, translation, summarization, QA
- Built an LSTM-based conversational agent as class project, adding a bidirectional, dynamic encoder and attention

Statistical Learning Theory (2017)
- Information Theory, Variational Methods, Gibbs Distribution, MCMC, Validation Theory, Annealing, Mean-fields

Rehabilitation Engineering (2017)
- Actuators and sensors, Human motor system, Exoprosthesis, Orthotics, Robot-aided therapy, Neuroprosthetics

Virtual Reality (2017)
- Haptics, visual feedback, projectors, headsets, display technologies, depth estimation, human senses, Unity Engine

Advanced Topics in Machine Learning (2016)
- Variational nets, Combinatorial & Strategic optimization, Riemannian manifolds, Deep-RL, Bandits, Causality

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 symmetry using CNN features

Theory of Robotics and Mechatronics (2016)
- Screw Theory, Forward/Inverse Kinematics, Jacobian, Force Control, Trajectory Generation, Micro/Nanorobotics

Traditional Computer Vision (2016)
- Performed transformations, feature extraction, tracking, segmentation, model-fitting, & multi-view reconstruction

Modern Computer Vision (2016)
- All types of CNNs, including R-CNN, FCN, Contrastive Nets, GANs, and Siamese Networks
- Devised CNN-based optimization for morphing images based on classification as custom project

Computer Graphics (2016)
- Implemented rasterization, texture mapping, Bezier surfaces, meshes, shaders, lenses, and ray-tracing
- Created a General-Relativistic raytracing program as custom project

Parallel Computing and Software (2015)
- Parallel design patterns and architectural paradigms for multi-core, GPU, and distributed computing
- Initiated a custom project which successfully sped up large-scale distributed neural-nets via IPC reduction

Image Manipulation and Computational Photography (2015)
- Assembled a pipeline for processing and identifying new supernovae using the KAIT telescope (Custom project)
- Wrote programs that automatically align, contrast, hybridize, blend, resize, carve, morph, and stitch images

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 Security (2015)
- Cryptography, block ciphers, RSA, DoS, TLS, TCP-IP, UDP, hashing theory, and blockchain techs
- Performed buffer-overflow, DNS spoofing, SQL Injections, and XSS Injections on mock victims

Efficient Algorithms and Intractable Problems (2014)
- Optimization, FFT, recurrence relations, graph theory, greedy algorithms, DP, complexity theory

Operating Systems and Systems Programming (2014)
- Implemented multiprogramming in an OS via threads, schedulers, shared file system, and VM mapping
- Created both a local and network-distributed key-value store system with atomicity and concurrency

Database Systems (2014)
- Engineered a database server with web-client interface and backend, from scratch, for an event-booking system

Computer Architecture (2013)
- Utilized OpenMP, SSE SIMD, CUDA, and Hadoop to speed up image convolution by a thousand times
- Constructed a functioning, pipelined MIPS CPU using Logisim

Data Structures and Interpretation of Programs (2012)
- Streams, disjoint-sets, splay trees, 2-4 trees, heaps, amortized analysis, and run-length encoding
- Wrote an interpreter for Scheme Lisp and a program to parse, search, and geo-map scraped Twitter data