Kourosh Arasteh

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Education

University of Illinois at Urbana-Champaign Electrical Engineering, BS- May 2019, Minor Computer Science

Technical Coursework:

Electrical and Computer Engineering:
- Multimedia Signal Processing*
- Field Robotics*
- Robotics
- Digital Signal Processing & Lab

Computer Science:
- Making Sense of Big Data*
- Artificial Intelligence
- Algorithms & Models of Computation
- Data Structures

Fundamentals:
- Probability with Engineering Applications
- Differential Equations Plus
- Calculus III Honors

Professional Experience

Undergraduate Research Assistant *Distributed Autonomous Systems Lab* Champaign, IL (9/17-Present)

Real-time classification of sub-canopy crop features using camera data. 3D LIDAR point cloud/camera data fusion using Extended Kalman Filters. Localization and mapping of dynamic,off-road environments (SLAM). Developing training regimes to minimize volume of training data required for algorithm convergence. Standardization of robotic data collection in the field.

GMT Intern – Automation Integration *Anheuser-Busch InBev* St. Louis, MO (6/17-8/17)

Research 802.11 standards and technologies for potential to apply to network infrastructure update. Revise legacy Anheuser-Busch Wireless and Wired LAN Standards. Updated all 22 US breweries to 5GHz wireless coverage. Develop documentation of Radio Resource Management best practices. Perform pilot RF signature site surveys to develop access point distribution plan.

Project Manager *DashVR(Startup)* Sunnyvale, CA (6/15-9/15)

Established and managed international supply chain. Maintained comprehensive social media presence, company blog, and online store. Developed prototypes to maximize ergonomics and profit. Drafted entirety of marketing collateral. Defined value proposition through consumer research and competitive differentiation. Collaborated with Google to get "Cardboard Certified." Maximized web traffic to site through improving SEO. Established network of market influencing bloggers.

Projects

Computer Vision:
- *SIFT(Scale-Invariant Feature Transform) Image Classification* – Scale-space Extrema Detection, Keypoint Localization, Orientation Assignment, and Keypoint Description for diverse image set
- *Facial Recognition & Tracking in Video* – Minibatch & Gradient Adversarial Training on Convolutional Neural Net
- *CV Integration with UR3 Robot* – Background Elimination, Multiple object tracking across frames, robotic manipulation

Signal Processing:
- *Multiband Excitation Speech Synthesis* – Human Vocoder for Voiced/Unvoiced Spectral Envelope & Excitation
- *Speech Recognition Gaussian Hidden Markov Model* – Recognition across 5 speakers and 5 words using HMM
- *Speech to Lips Video Synthesis* – Barycentric Representation and Metric Learning for lip pose to speech
- *Shazam System Implementation* – Audio fingerprinting, Combinatorial hashing of frequency domain peak constellations for sample matching & optimized lookup

Artificial Intelligence/Machine Learning:
- *Maze Solver & Path Planning* – Implemented A*, D*, Greedy BFS for 2D Maze Solver
- *Minimax Gomoku Player* – Created Minimax and Reflex Agents to play a game of Gomoku
- *Q-Learning, SARSA, Deep Reinforcement Learning Pong Players* – Developed 3 Agents to play 2-Player Pong

Skills

Software Fluencies: Python, C++, OpenCV, ROS, Tensorflow, Scikit-Learn, Pandas, MATLAB

Activities

Engineering Open House, Director, Director of Exhibits   Champaign, IL (8/15 - Present)
    -Led board of 24 engineers in planning and execution of College-wide Showcase, 30,000+ visitors, 300+ exhibitors

Chabot Space & Science Center, Senior Team Captain   Oakland, CA   (5/13 – 6/15)