Charles Dunn

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Objective

I am seeking a position to research, develop, and implement industry-leading computer vision and video processing algorithms. I would bring experience in video encoding, spherical projections, 3D geometry, and algorithm optimization.

Work Experience

YouVisit Virtual Reality Research and Development, Computer Vision Engineer, 2015-present

Researched and prototyped state-of-the-art algorithms for 3D scene generation from single monoscopic images using vanishing point detection and Manhattan line reconstruction. Derived a novel method for generating optimal projections from desired resolution functions for Virtual Reality content delivery. First inventor on multiple pending patents related to Adaptive Focus VR content encoding and transmission. Implemented encoding and decoding systems reducing data by 64%, requiring code in MATLAB, C (FFmpeg), Python, Bash, C# (Unity), and GLSL. Advised YouVisit Studios on VR camera rig geometries. Established and grew the research and development team.

MIT Lincoln Laboratory ISR & Tactical Systems Division, Associate Technical Staff, 2012-2015

Developed and implemented algorithms for a unique radar system including creating analysis tools, functionalizing a full algorithm simulator, and modifying complex existing processing. Solved for the PDF of a highly non-linear combination of noise distributions and verified the result using real data. Independently identified mathematical inconsistencies in the existing algorithm, which led to a significant performance improvement. Presented results to coworkers, the larger program community, and sponsors.

Leveraged feature distribution divergence to dramatically accelerate feature selection and performance analysis of machine learning classification. Empirically determined the linear indices of all diagonal elements of a variable-dimensional data hypercube. Quickly employed open source code and developed a ray-tracing visible light simulation for a vulnerability study.

Johns Hopkins Applied Physics Laboratory GPS Circuit Design and Signal Processing Intern, 2010 and 2011

Education

4.00/4.00	800/800	3.80/4.00	35/36
Graduate GPA	GRE Quantitative	Undergraduate GPA	ACT Composite

Stanford University MS in Electrical Engineering 2012 – Communication Systems Concentration

Best Group Project for Efficient Compression Techniques for Stereoscopic Image Pairs https://goo.gl/evcThO

Stanford University BS in Electrical Engineering 2011 – Circuits and Devices Concentration

Honorable Mention for Derivative Karel in the CS106A Karel Contest

MIT Advanced Study Program 2015

Honorable Mention for Cipher Breaking Using Markov Chain Monte Carlo Contest https://goo.gl/HEtEmY

Personal Interests

0	1	2	3	4	5	6	7	8	9
Adventure races won (out of 5)	IM soccer title	Weeks on the VT Long Trail	200 mile Ragnar relay races	Minute 52 second mile (2012)	Months lived in Japan	YouTube videos with >4k views	Ball cascade juggling pattern	Raymond Chandler novels read	States camped in