Charles Dunn

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Objective

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

Work Experience

**YouVisit** Virtual RealityResearch and Development, Computer Vision Engineer, 2015-present

Derived a novel method for generating optimal 3D-to-2D spherical 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. Researched and prototyped state-of-the-art algorithms for 3D scene generation from single monoscopic images using vanishing point detection and Manhattan line reconstruction. 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

800/800

GRE Quantitative

4.00/4.00

Graduate GPA

3.80/4.00

Undergraduate GPA

35/36

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

IM soccer title

States camped in

Weeks on the VT Long Trail

2

1

Adventure races won (out of 5)

0

Minute  
52 second  
mile (2012)

4

200 mile Ragnar relay races

3

Months   
lived in   
Japan

5

YouTube videos with >4k views

6

Ball cascade

juggling  
pattern

7

9

Raymond Chandler novels read

8

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