

Evan Widloski

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Callsign: KD9FMW

Focus

I am pursuing a PhD under Farzad Kamalabadi and co-advised by Lara Waldrop with a focus on inverse problems in the context of remote sensing. Specifically, I currently work on using machine learning techniques to perform 3D tomographic reconstruction of Hydrogen density in the Earth's atmosphere.

Education

University of Illinois Urbana-Champaign

PhD Electrical Engineering - atmospheric remote sensing, tomography. Advised by Lara Waldrop and Farzad Kamalabadi 2021-present

University of Illinois Urbana-Champaign

MS Electrical Engineering - DSP and remote sensing, computational optics. Advised by Farzad Kamalabadi. 2018-2020

Purdue University

BSEE Electrical Engineering, BS Mathematics 2013-2017

Research Experience

NASA Carruthers Geocoronal Observatory (CGO) - research assistant

Developed tomography pipeline for reconstructing 3D H densities in Earth's exosphere from measurements taken from Carruthers' Lyman-alpha instrument. 2022-present

NASA Milli-Arcsecond Imaging with Smallsat Enabled Super Resolution (MAS) - research assistant

Built computational framework for simulating forward optical system with photon sieve 2018-2020

NASA Virtual Super Resolution Optics with Reconfigurable Swarm (VISORS) - research assistant

Developed registration algorithm for aligning smallsat science data under spacecraft drift and extreme noise 2019-2022

Publications

Low SNR Multiframe Registration for Cubesats - IEEE ICIP ([link](#)) 2022

Optimal Measurement Configuration in Computational Diffractive Imaging - IEEE ICIP ([link](#)) 2020

Low-Complexity System and Algorithm for an Emergency Ventilator Sensor and Alarm - IEEE BioCAS ([link](#)) 2020

Technical Skills

Engineering

Digital Signal Processing
AVR Microcontrollers - 5+ years
KiCAD - 5+ years
Solidworks

Computing

Python - proficient
C, Go, Octave, Latex, JS - familiar

Selected Classwork

ECE438 - Signal Processing and Systems
ECE558 - Digital Imaging
ECE463 - Digital Communications Lab
ECE549 - Computer Vision
ECE551 - Digital Imaging 2
ECE561 - Detection and Estimation

MA514 - Numerical Analysis
ECE513 - Vectorspace Linear Algebra
ECE534 - Random Processes
ECE407 - Cryptography
ECE598ID - Inverse Problems and Learning

Achievements and Awards

Purdue University Dean's List	2015, 2016, 2017
Rappaport Wireless Communication Scholarship	2016
RCA Zworykin Scholarship	2014

Previous Work Experience

UIUC Senior Design - teaching assistant	
Technical advisor for senior level capstone design course	2018-2020
Spooky Action Robotics - cofounder	
Designed high power 5kW tether system for multicopter capable of multi-day flight	2016-2018, 2020
Texas Instruments - field applications engineer	
Designed high power 5kW tether system for multicopter capable of multi-day flight	2016
Qualcomm - software engineer	
Developed API shim for emulating mobile biometric hardware	2015

Extracurricular

Purdue Orbital Team - electrical lead	
Designed mesh node for high altitude balloons with custom APRS modem based on AVR	2016-2017
Purdue IEEE ROV Team - electrical lead j	
Designed compact, addressable motor controller for submersible vehicle. Build powerline transmission capable of delivering 2 NTSC video feeds with additional bidirectional data stream for vehicle telemetry.	2013-2015
Purdue Linux Users Group - president	
Organized meetings and lectured on topics such as Python, regular expressions, init systems, Buildroot, networking	2013-2017

Presentations

A Tour of KiCAD - UIUC Senior Design	2020
Introduction to Postscript (the printer language) - UIUC Linux Users Group	2019
Electrical Series - Board Layouts in Eagle - Purdue EPCS202	2017
Electrical Series - Schematics in Eagle - Purdue EPCS202	2017
Becoming a Vim Power User - Purdue Linux Users Group	2016
Git Version Control - Purdue Linux Users Group	2015
Grokking Bash - Purdue Linux Users Group	2015
Regular Expressions Primer - Purdue Linux Users Group	2014
Linux File Permissions - Purdue Linux Users Group	2014