Aaron J. Pung, Ph.D.

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Education

Bachelor of Science:	**Physics**	Kansas State University	2008
Master of Science:	**Optical Engineering**	University of North Carolina	2011
Doctorate of Philos.:	**Photonic Science**	Clemson University	2013

Experience

Signal Processing Engineer – 10/2022 to Present
Slingshot Aerospace, Remote

- Constructed a digital twin of the radio frequency (RF) environment for air-, land-, sea-, and space-based assets, resulting in a brand-new capability set for the company.
- Performed radiometric and polarimetric analysis of terrestrially-tracked satellites in synthetically generated scenes.
- Developed and validated satellite communication signal structures using Fibonacci and Galois algorithms, resulting in a 3X increase in detectable and decodable signals.
- Designed custom lens arrays for novel telescope systems, providing cost-effective all-COTS solutions for military contracts.

RF Signal Processing Engineer – 09/2020 to Present
Space Dynamics Laboratory, Albuquerque, NM

- Conceptualized, validated, and submitted two sole-author patents for small satellite technology, resulting in miniaturized and modular solutions in atmospheric measurements
- Automated large scale data analysis from water-, air-, and ground-based RF and optical systems, drastically reducing the data-to-document time window
- Independently created a data-agnostic multi-purpose tool suite for RADAR signal analysis, providing real-time characterization and classification of passively collected signals

Optical Engineer / Computer Scientist - 01/2015 to 08/2020
Sandia National Laboratories, Albuquerque, NM

- Led modeling efforts to design and characterize electro-optic infrared sensors, resulting in a 2019 R&D100 Award for Nanoantenna-Enabled Detectors (NEDs)
- Assessed and improved sub-pixel tracking algorithms, increasing performance for on-orbit and ground-based detection systems
- Scraped and analyzed hyperspectral satellite imagery, providing validation for vegetation health models
- Established transparency and accountability in small and medium-sized software development teams, producing an 18% rise in efficiency
- Created new visualization techniques for space-, time-, and frequency-dependent data, reducing overall analysis time

Patents

U.S. Patent Application, 65/535505, "Freeform Lightweight Eyewear System," Aug. 30, 2023.
U.S. Patent Application, 18/131806, "Slotted Eyewear System," April 6, 2023.
U.S. Patent Application, 17/974094, "Uniaxial Optical Multi-Measurement Imaging System", Oct. 26, 2022
U.S. Patent Application, 17/954446, "Aperture Stop Exploitation Camera," Sept. 28, 2022.
U.S. Patent Application, 17/540327, "Uniaxial Optical Multi-Measurement Sensor," Dec. 2, 2021.
U.S. Patent 11761750, "Multi-environment Rayleigh Interferometer," Sep. 19, 2023
U.S. Patent 16369218, "Optical Devices Enabled by Vertical Dielectric Mie Resonators," May 5, 2021.

Publications (Journal)

Aaron J. Pung, "Computational analysis of a scalable optically homogeneous free-space interferometer," J. Opt. Soc. Am. A 40, 1789-1796 (2023)

Aaron J. Pung, "Capturing multiple full-scene images with a single camera via aperture stop exploitation," J. Opt. Soc. Am. A 39, 1456-1461 (2022).

(Full list available upon request)

Editorial Boards / Reviewer

SPIE – *Optical Engineering*	Reviewer, 2019 – Present
MDPI – *Materials / Symmetry / Applied Sciences / Micromachines*	Reviewer, 2019 – Present
SciencePG - *Optics*	Editorial Board, 2020 – Present
Journal of Nanotechnology in Diagnosis and Treatment	Editorial Board, 2020 – Present
Journal of Imaging	Reviewer Board, 2020 – Present

Conference chair/committees

SPIE – Adv. Fab. Tech. for Micro/Nano-Optics and Photonics	2015 - Present
OPL – Multi-dimensional Applications of Photonics, Optics, and Lasers	2022

Awards

Employee Recognition Award (Sandia National Laboratories)	2020
R&D100 Award	2019