Nick **Asendorf**

ML Researcher · AI Manager

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What's Next

My academic background is in statistical signal processing - some may call this machine learning, others data science, others artificial intelligence. Regardless of the buzzword or nomenclature, I approach projects by asking two fundamental questions: What problem are you trying to solve and what data do you have to make solve it? For the past few years, I've managed teams of software engineers and AI researchers. This foray into management has allowed me to sharpen my leadership skills, hone my management style, and develop the culture I try to instill. I am looking to move to a senior individual contributor role to join a company with a clear vision and roadmap, the ability to strategically prioritize, and a team of brilliant engineers with the tenacity to make it all happen.

Education

University of Michigan   *Ann Arbor, MI*

Ph.D. and M.S. in Electrical Engineering: Systems   *Aug 2010 - May 2015*

- GPA: 4.0/4.0
- Advisor: Prof. Raj Rao Nadakuditi
- Dissertation: "Informative Data Fusion: Beyond Canonical Correlation Analysis" Link to pdf

University of Maryland   *College Park, MD*

B.S. in Computer Engineering   *Aug 2006 - May 2010*

- GPA: 4.0/4.0, Gemstone Honors Program, Eta Kappa Nu

Industry Experience

3M Company, Corporate Research Systems Lab   *Maplewood, MN*

Machine Learning and Data Science Manager   *Aug 2021 - Present*

- Supervise, mentor, and coach 22 machine learning and AI researchers across 7 scrum teams.
- Responsible for team's IP strategy and research portfolio, including computer vision for healthcare and manufacturing process control, reinforcement learning for manufacturing, GANs for automated product design, and active learning for material discovery.
- As part of corporate DE&I task force, developed an executive mentorship program for technical employees.

AI Software Manager   *Feb 2019 - Aug 2021*

- Supervised, mentored, and coached a team of 15 full stack developers and software engineers across 10 scrum teams.
- Developed team's recruiting strategy resulting in 14 new hires.
- Product Owner for research collaboration with the University of Chicago developing molecular dynamic simulation pipelines for material discovery.
- Product Owner for cloud infrastructure team for internal material discovery web application.
- Improved lab's scrum practices by proposing and implementing scrum at scale and online master backlog.

Data Scientist   *Aug 2015 - Jan 2019*

- Led a research team that deployed anti-counterfeiting algorithms using image processing, deep learning, and machine learning. Enabled global rollout of iOS application with custom Tensorflow algorithms deployed in Microsoft Azure.
- Developed population health analytics tools in collaboration with Verily Life Sciences.
- Developed a proof-of-concept materials informatics tool (Python, Flask, Docker, DynamoDB, and Angular) to connect formulation and performance data.
- Developed a supply chain analytics tool and visualizations in partnership with C3IoT.
- Explored natural language processing algorithms for analysis of medical records and customer call data using Spark, word embeddings, and Microsoft Power BI.
- Deployed a python machine learning algorithm on AWS that automated sales lead assignments.
- Developed a `MATLAB` tool to analyze chemical data using blind source separation algorithms.
- 7 patent applications. 1 Granted.

R&D Graduate Intern   *Summer 2014*

- Analyzed unstructured text data from large-scale medical databases using Hadoop MapReduce and natural language processing algorithms.
- Analyzed traffic flow data to identify outliers using spatio-temporal algorithms.

AAI Corporation, Textron subsidiary   *Hunt Valley, MD*

Software Engineering Intern   *Summers 2007, 2008, Winter 2009*

- Debugged and added additional features to a legacy `C++` user interface that controlled multi-generational unmanned aircraft.
- Developed Wireshark scripts that captured and decoded communication messages from unmanned aircraft.

Academic Experience

University of Michigan *Ann Arbor, MI*
GRADUATE STUDENT RESEARCH ASSISTANT *Aug 2010 - May 2015*
- Ph.D. research included multi-modal data fusion, correlation analysis, random matrix theory, data driven algorithms for machine learning and statistical signal processing applications, and detection theory.

University of Maryland *College Park, MD*
UNDERGRADUATE RESEARCH INTERN *June 2009 - May 2010*
- Designed and performed auditory MEG experiments exploring neural responses to low-frequency auditory stimuli.
- Developed noise reduction algorithms for time-frequency analysis of MEG data.

Skills

Expert in	Python, git, LaTeX, Machine Learning, `MATLAB`
Experience with	Docker, Tensorflow, AWS (CloudFormation, Lambda, Sagemaker, EC2, S3, ECS, DynamoDB), Spark, Jira, Azure DevOps
Tinkered with	HTML, CSS, Angular, AWS (TexTract, Rekognition), Java, Javascript, Django, Flask, `C#`, `C++`
Strengths include	Leadership, Prioritization, Communication, Tenacity

Honors & Awards

2018	**Technical Excellence & Innovation Award (Individual)**, 3M Corporate Research System Lab
2017	**Technical Excellence & Innovation Award (Team)**, 3M Health Care Business Group
2017	**Technical Excellence & Innovation Award (Individual)**, 3M Corporate Research System Lab
2014	**Awardee**, Richard and Eleanor Towner Distinguished Academic Achievement Prize
2013	**Finalist**, Qualcomm Innovation Fellowship
2013	**Best Poster Award**, University of Michigan Engineering Graduate Symposium
2012	**Best Poster Award**, University of Michigan Engineering Graduate Symposium
2010	**Awardee**, University of Michigan Rackham Merit Fellowship

Selected Publications

2017	**IEEE Transactions on Information Theory**, Improved Detection of Correlated Signals in Low-Rank-Plus-Noise Type Data Sets Using Informative Canonical Correlation Analysis (ICCA), Link to publication
2013	**IEEE Transactions on Signal Processing**, The Performance of a Matched Subspace Detector That Uses Subspaces Estimated From Finite, Noisy, Training Data, Link to publication

Service

2019-present	**Mentor**, University of Maryland Gemstone Alumni Mentor & Partner Program
2015-present	**Judge**, Minnesota State Science Fair
2015-2019	**Mentor**, Totino Grace High School Engineering Program
2010-2014	**Member**, Michigan ECE Graduate Student Council (President 2012-2014)
2011-2014	**Organizer**, Michigan Student Signal Processing Seminar Series