

Marie D. Manner, Ph.D.

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Summary

Data scientist with 6+ years in R&D, 5 peer-reviewed publications, and 55 provisional patents.

Skilled in python programming; computer vision and machine learning with OpenCV; object detection and deep learning in TensorFlow; Linux and Windows environments; Azure cloud services; human research studies; interdisciplinary collaboration; recruiting; mentoring.

Experience

Data Scientist

Jan. 2019 – present

3M, Personal Safety Division

Maplewood, MN, USA

- Basic duties: research and develop computer vision proofs of concepts and product-oriented machine learning models trained in respiratory protection, personal safety and protection, automated inspection, automated safety compliance, oral care, and wound management
- Deliver a new IP portfolio of 26 families with 55 global provisional and non-provisional patents (prophetic and reduced to practice) and 40 invention submissions

Data Science Specialist (Job grade T4)

February 2022- present

- As PI, design and write IRB protocol, collect and analyze data for study relating digital and analog respirator measurements (approved May 2022), update review board
- Design and program mobile application features for taking human measurements with iOS in C# / Xamarin with ARKit after writing the original intelligence with python and MediaPipe
- Present and demonstrate work for management from division president to CTO

Data Scientist (Job grade T3)

January 2019 - February 2022

- Recognized for contributions to 3M as recipient of 2021 corporate, business group, and division level Circle of Technical Excellence and Innovation award
- Analyzed safety and inspection tool client data to suggest and design new app features, including NLP on customer usage and support data, ML for customer clustering
- Build relationships, collaborate with SMEs, review state of the art literature and patents, investigate competitive products, and reduce new product and feature concepts to practice
- Took over as PI for existing study on respiratory protection product comfort (2021)
- Designed and implemented programs and designed 3D equipment for Universal Robot UR5
- Tested, analyzed, reported to management on capabilities of product authenticity vendor

Additional activities

- Lead UMN data science team for annual PhD and Master's recruitment event: hold information session, review resumes for phone screen invitations, assemble interview team, arrange interviews, conduct interviews (2021, 2022); member of interview team (2020)
- Mentor and supervise undergraduate, graduate, and high school teacher data science interns in programming practices, tools, reports, patenting inventions (1/year 2019-2023)
- Committee member for 3M RISE symposium supporting minorities in STEM fields; introduced and led mentoring groups, resume writing workshops (annually 2020-present)

Adjunct Lecturer

University of Minnesota, College of Science and Engineering

Jan. 2022 - May 2022

Minneapolis, MN, USA

- Co-taught undergraduate writing intensive course, Artificial Intelligence, 4511W
- Responsible for writing intensive half of course: wrote and graded reading and writing assignments, held office hours; taught LaTeX(100+ students)

Research Intern

May 2017 - Dec. 2018

Smart Information Flow Technologies

Minneapolis, MN, USA

- Research and development in python for various Small Business Innovation Research awards, including a project on detecting regard-altering strategies in text-based interactions
- Assist writing grant proposal, assist writing project reports for phase summaries

Research Assistant (Ph.D. work)

Aug. 2010 - Dec 2018

University of Minnesota, College of Science and Engineering

Minneapolis, MN, USA

- Designed and ran social interaction study with NAO robots for use with toddlers; collected and analyzed video and developmental assessment study data (PhD thesis)
- Rewrote analysis tool and provided continuing support and feature additions for eye tracking data for Elison Lab (Institute of Child Development, UMN), resulting in journal publication
- Implement deep learning methods for image and video analysis for child-robot interactions
- Implement machine learning clustering and regression methods for participant analysis combining child assessments and robot interaction data (python, tensorflow)
- Guest researcher at Delft University of Technology studying human-agent teamwork, resulting in 2 workshop presentations, 1 poster presentation (May-July 2012)
- Teacher's assistant from 2010-2012, 2015-2018, in machine architecture, OSs, and AI for undergraduates (100+ students)

Select Patent Applications (26 families, 55 global applications)

(WO-2023285919-A1) Seal evaluation systems and methods for personal protection devices

(WO-2022235472-A1) Systems and methods for improved respiratory protection devices

(WO-2022079540-A1) Readiness state detection for personal protective equipment

(WO-2021224728-A1) Systems and methods for personal protective equipment compliance

Twenty-two applications visible at:

[https://patents.google.com/?q=\(3m\)&inventor=marie+d.+manner](https://patents.google.com/?q=(3m)&inventor=marie+d.+manner)

Education

Ph.D. Computer Science - *University of Minnesota - Twin Cities*

2018

Thesis: Leveraging computer vision and humanoid robots to detect autism in toddlers

Advisor: Maria Gini; Principal Investigator: Jed Elison

M.S. Computer Science; psychology minor - *University of Minnesota - Twin Cities*

2013

B.S. Mathematics; computer science minor - *St. Catherine University*

2009

Other activities

- Previous career in software quality assurance (BSquare, Pearson VUE) from 2007-2011
- Tutored GED math students for Minneapolis Adult Basic Education (2013-2015, 2020-2023)
- Adjunct lecturer at St. Kate's for CS1 and CS2 level class (2013-2014 school year)
- I enjoy mentoring via UMN's STEM mentorship program, SCUBA diving, and boxing