Marco La Manna | Resume

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Summary

- Research scientist with specialization in algorithm engineering applied to signal and image processing for radar and optical systems. Proven leadership, collaborative and communication skills.

Education

Michigan Technological University — **Houghton, MI**
PhD, Electrical Engineering — *2012–2016*

University of Pisa — **Pisa, Italy**
MS, Telecommunication Engineering — *2008–2011*

University of Pisa — **Pisa, Italy**
BS, Telecommunication Engineering — *2005–2008*

Skills

Computer: MATLAB, LabVIEW, C++, HTML, Microsoft Windows, Excel, PowerPoint, LaTeX, Mac, Windows, Linux

Hardware: Class 4 fs/ps-pulsed lasers, time-of-flight cameras, time-correlated single photon counting (TCSPC), optical components, electronic test instruments

Technical: Radar systems, optical systems; detection and estimation theory

Research Experience

University of Wisconsin – Madison — **Madison, WI**
Postdoctoral Research Associate — *2016–Present*

- **Project:** REVEAL – Revolutionary Enhancement of Visibility by Exploiting Active Light-fields (funded by DARPA – Defense Advanced Research Projects Agency)
  - How to see around a corner using an optical system?
    - Assembled and tested a hardware prototype comprising an ultra-fast laser and time-of-flight camera (SPAD)
    - Designed and implemented a MATLAB iterative algorithm based on backprojection and algebraic reconstruction techniques to improve over the state-of-the-art
  - Mentored and supervised undergraduate and graduate students in the realization of simulations and experiments
  - Organized the Git repository for the programming scripts relative to this project
- **Project:** Lake Tomography – Fast 3D Mapping of Harmful Algal Blooms (HAB) Development and Distribution in Wisconsin Lakes (currently unfunded)
  - How to map lake microorganisms with ultra-fast optics?
    - Engineered a fast and cost-efficient computational imaging system capable of 3D mapping of microorganisms in lakes that frequently experience harmful algal blooms (HABs)

- Developed a research proposal (budget included)
- Mentored and supervised undergraduate and graduate students in the realization of simulations and experiments

Michigan Technological University **Houghton, MI**
Graduate Research Assistant *2012–2016*

- **Project:** Hybrid MIMO Phased Array Radar (HMPAR) Receive Signal Processing (*PhD Dissertation*)
  - How to process the receive signal for a radar that combines MIMO and phased array techniques (HMPAR)?
    - Conducted background literature review on HMPAR
    - Derived analytically the Cramer-Rao Lower Bounds (CRLB) for the HMPAR
    - Evaluated the HMPAR CRLB and compared them to state-of-the art through MATLAB simulations
- **Project:** An Active Divide-and-Conquer Algorithm for Sparse Support Recovery
  - Conducted background literature review on Compressed Sensing
  - Implemented in MATLAB a novel algorithm for sparse support recovery, based on a divide and conquer approach

Michigan Technological University **Houghton, MI**
Visiting Scholar (MS Researcher) *2011*

- **Project:** Adaptive Sensing in Distributed MIMO Radars (*MS Thesis*)
  - Conducted background literature review on MIMO radars
  - Implemented a novel algorithm for target localization in a 2-D discrete space
  - Evaluated algorithm performance through MATLAB simulations

Awards

May 2016: Student Travel Grant, 2016 IEEE Radar Conference

2014–2016: Dave House Graduate Research Fellowship

Spring 2014: Jonathan Bara Award, Outstanding Graduate Teaching Assistant

Selected Activities

2014–2015: **Vice-President**, Graduate Student Government of Michigan Tech. Univ.

2013–2014: **Public Relations Chair**, Graduate Student Government of Michigan Tech. Univ.

2012–2013: **Department Representative**, Graduate Student Government of Michigan Tech. Univ.

Selected Publications & Presentations

S. A. Reza, **M. La Manna**, and A. Velten, "Imaging with Phasor Fields for Non-Line-of Sight Applications", *Imaging and Applied Optics 2018*, Orlando, FL, 2018, paper CM2E.7

M. La Manna, et al., "Error Backprojection Algorithms for Non-Line-of-Sight Imaging", *(Early Access), IEEE Trans. Pattern Anal. Mach. Intell.*, Jun. 2018

M. La Manna, D. Fuhrmann, "Cramér–Rao Lower Bound Comparison for 2D Hybrid-MIMO and MIMO Radar", *IEEE J. Sel. Topics Signal Proc.*, vol. 11, no. 2, pp. 404 - 413, Mar. 2017

M. [Mario] La Manna, **M. [Marco] La Manna** "Cognitive Radar Waveforms for Frequency Dense Environments", *2017 IEEE Radar Conf. (RadarConf)*, Seattle, WA, 2017, pp. 1603-1607