Marco La Manna, PhD

Sr. Research Engineer

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Summary

Experienced research engineer in the field of signal processing and computational imaging. Interested in applying cutting edge theoretical concepts into hardware prototypes. Proven leadership and communication skills.

Skills

Hardware	Electronic test instruments, RF components, optical components, time-of-flight cameras (SPAD, APD), pulsed lasers (Class 4), stereo-camera systems
Scripting / Programming	Python, Matlab, C, LabVIEW
Version control	Git, Bitbucket
Computer	*OS:* Mac, Windows, Linux *Software:* Microsoft Word, Microsoft Excel, Microsoft PowerPoint, LaTeX

Research Experience

KMB Telematics, Inc. — Arlington, VA
Senior Research Engineer — Jun. 2019 - Present

- Applying novel radar system and signal processing concepts in the field of automotive radar, in order to create a safer driving experience

University of Wisconsin - Madison | *Computational Optics Group* — Madison, WI
Research associate (post-doctorate) — Oct. 2016 - May 2019

Project: Revolutionary enhancement visibility by exploiting active light fields (REVEAL), funded by DARPA

- Assembled and tested a multifunctional hardware prototype for fast and reliable non-line-of-sight imaging data acquisition
- Designed, implemented and published an iterative reconstruction imaging algorithm, based on backprojection and algebraic reconstruction techniques
- Co-authored the proposal for the Draper Technology Innovation Fund (internal funding)
- Collaborated with other group members (research associates and students) on various projects
- Supervised and mentored undergraduate and graduate students on their research work

Michigan Technological University Houghton, MI
Graduate research assistant Feb. 2012 - Aug. 2016

Project: Hybrid MIMO phased array radar (HMPAR) receive signal processing (PhD Dissertation), partially funded by the Dave House graduate research fellowship

- Derived analytically the Cramer-Rao lower bounds (CRLB) for various HMPAR configurations
- Evaluated the receive signal processing performance through Monte Carlo simulations and compared them to the CRLB

Project: An active divide-and-conquer algorithm for sparse support recovery, partially funded by US NSF grant no. EECS-0925881

- Analyzed and implemented a novel algorithm for sparse support recovery, based on a divide-and-conquer approach

Education

Michigan Technological University Houghton, MI
PhD | Electrical Engineering Feb. 2012 - Aug. 2016

University of Pisa Pisa, Italy
MS | Telecommunication Engineering Dec. 2008 - Sep. 2011

University of Pisa Pisa, Italy
BS | Telecommunication Engineering Sep. 2005 - Dec. 2008

Awards

- 2016 IEEE Radar conference student travel grant
- 2014 - 2016 Dave House graduate research fellowship
- 2014 Michigan Tech Electrical and Computer Engineering Outstanding Graduate Teaching Assistant (Jonathan Bara Award)

Patents (Pending)

- Non-line-of-sight imaging system for distant measurement *(Patent pending)*

Selected Publications

- S. Reza, **M. La Manna**, et al., “Phasor field waves: A Huygens-like light transport model for non-line-of-sight imaging applications", in Optics Express, vol. 27, no. 20, Sep. 2019.
- X. Liu, I. Guillen, **M. La Manna**, *et al.*, “Non-line-of-sight imaging using phasor-field virtual wave optics”, *Nature*, vol. 572, no. 7771, Aug. 2019.
- **M. La Manna**, *et al.* “Error backprojection algorithms for non-line-of-sight imaging”, *IEEE. Trans. Pattern Anal. Mach. Intell.*, vol. 41, no. 7, pp. 1615-1626, Jul. 2019.
- **M. La Manna**, D. Fuhrmann, “Cramer-Rao lower bound comparison for 2D Hybrid-MIMO and MIMO radar”, IEEE J. Sel. Topics Signal Proc., vol. 11, no. 2, Mar 2017.
- **M. La Manna**, D. Fuhrmann, “Target location estimation performance evaluation for a 2D hybrid-MIMO radar”, *2017 Radar Conf. (RadarConf)*, May 2017.