

# Nathan R. Patrizi

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## Research Interests

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Game Theory; Reinforcement Learning; Distributed decision making; Optimization of dynamic systems involving stochasticity, uncertainty, and risks; Resource orchestration in resource-constrained environments; Artificial intelligent cyber-physical systems; Control of interdependent wireless systems.

## Education

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### University of New Mexico

Bachelor's Degree in Computer Engineering (GPA 3.38)  
Ph.D Student in Computer Engineering

Completion date: May 2019  
Aug. 2019 - current

### Curriculum

- **Machine Learning:** Studied support vector machines, linear regression, Hilbert spaces, and Gaussian processes.
- **Advanced Networks:** Studied the networking protocol stack and performed a project on Network function Virtualization.
- **Foundations of Computing:** Studied algorithmic techniques and advanced data structures.

## Technical Skills

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**Programming Languages:** C, C++, Python, Ruby, Java, VHDL, NI LabVIEW, MATLAB, Assembly  
**Operating Systems:** macOS, Linux, Windows  
**Software:** Wireshark, CLion, Microsoft Office

## Technical Experience

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- Teamed with others to accomplish complex projects. Examples include: programming 4 function calculator in LabVIEW, Arduino maze solving robot, design of audio amplifier.
- Worked in a team to develop a reinforcement learning algorithm to model human decision making in smart city environments. Used Minority Game Theory and Stochastic Learning Automata concepts to model optimal decision making and scheduling in smart city environments.

## Work Experience

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### Lab Assistant, University of New Mexico, Albuquerque, NM (September 2018 – May 2019)

- Research Internet of Things concepts and devices along with their applications. Studied BLE beacons and Passive RFID for location tracking applications.
- Coordinated with investors to make purchases of equipment that helped improve the lab. Responsible for installing and maintaining the equipment in the lab.
- Presented research and work being done in the lab to visitors to the University at open houses and visits with potential research partners.

### Year Round Intern, Sandia National Laboratories, Albuquerque, NM (March 2019 – Current)

- Developed a program to sense surrounding environment (e.g., pressure, temperature, humidity) through the use of an Arduino/Raspberry Pi. Utilized multiple transmission techniques to transmit data to a control unit for further processing and presented the results through real time plotting.

## Publications

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- [1] N. Patrizi, P.A. Apostolopoulos, K. Rael, and E.E. Tsiropoulou, "Socio-Physical Human Orchestration in Smart Cities," In 2019 IEEE International Conference on Smart Computing (SMARTCOMP), pp. 115-120. IEEE, 2019.
- [2] G. Fragkos, N. Patrizi, E.E. Tsiropoulou, and S. Papavassiliou, "Socio-aware Public Safety Framework Design: A Contract Theory based Approach," In IEEE International Conference on Communications (ICC), 2020 (under review).