

## Carlos Díaz Alvarenga

Assistant Professor  
Department of Computer Engineering  
California Polytechnic State University  
San Luis Obispo, CA 93407-0355

Email: [cdiazalv@calpoly.edu](mailto:cdiazalv@calpoly.edu)

Phone: (805)756-5607

URL: [faculty website](#)

### Employment History

*Sept. 2024 – Present*

*Cal Poly, San Luis Obispo*

Assistant Professor, Computer Engineering

- Research in robotics, autonomous patrolling, agricultural robotics, and machine learning for control and navigation.
- Teaching specialties include autonomous mobile robotics, computer organization

### Education

*August 2018 – August 2024*

*University of California, Merced*

- Ph.D. in Electrical Engineering and Computer Science graduate group
- Dissertation: “On Patrolling Security Games, Modeling Agents, and Computing Viable Strategies”

*August 2014 – May 2017*

*University of California, Merced*

- B.S. Applied Mathematics
- Concentration in Computer Science

### Professional Interests

Robotics, constrained planning, computational sustainability, patrolling security games, and agricultural robotics.

Member of: IEEE, IEEE Robotics and Automation Society (RAS)

### Publications

*Peer-Reviewed Conference Papers*

1. C. Díaz Alvarenga, N. Basilico, S. Carpin (2024). “Learning Generalizable Patrolling Strategies Through Domain Randomization of Attacker Behaviors.” *Proceedings of the IEEE International Conference on Robotics and Automation*. 4406-4412.

2. C. Díaz Alvarenga, N. Basilico, S. Carpin (2024). “Combining Coordination and Independent Coverage in Multirobot Graph Patrolling.” *Proceedings of the IEEE International Conference on Robotics and Automation*. 4413-4419.
3. C. Díaz Alvarenga, S. Carpin (2023). “Track, Stop, and Eliminate: An Algorithm to Solve Stochastic Orienteering Problems Using MCTS.” *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*. 9894-9901.
4. M. Khazaei Pool, C. Díaz Alvarenga, M. Kallmann (2023). “Path Smoothing with Deterministic Shortcuts.” *Proceedings of the IEEE International Conference on Robotic Computing*. 411-415.
5. C. Díaz Alvarenga, N. Basilico, S. Carpin (2020). “Multirobot Patrolling Against Adaptive Opponents with Limited Information.” *Proceedings of the 2020 IEEE International Conference on Robotics and Automation*. 2486-2492.
6. C. Díaz Alvarenga, N. Basilico, S. Carpin (2019). “Time-Varying Graph Patrolling Against Attackers with Locally Limited and Imperfect Observation Models.” *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems*. 4869-4876.
7. C. Díaz Alvarenga, N. Basilico, S. Carpin (2019). “Delayed and Time-Variant Patrolling Strategies Against Attackers with Local Observation Capabilities.” *Proceedings of the International Conference on Autonomous Agents and Multiagent Systems*. 1928-1930.

## Conference Participation

### Participant

- *IEEE International Conference on Robotics and Automation*. 05/2024. Yokohama, Japan.
- *IEEE International Conference on Intelligent Robots and Systems*. 10/2023. Detroit, Michigan, USA.
- *IEEE International Conference on Robotics and Automation*. 05/2020. Virtual.
- *IEEE International Conference on Intelligent Robots and Systems*. 11/2019. Macau, China.

## Grants

### Funded (internal)

- Professor, Diaz Alvarenga (PI). Believe, Educate & Empower, Advocate, Collaborate, Nurture (BEACoN) Research Scholars. *Integrating Machine Learning for Enhanced Navigation in Mobile Robots*. Funded \$2,000.
- Professor, Diaz Alvarenga (co-PI). Believe, Educate & Empower, Advocate, Collaborate, Nurture (BEACoN) Research Scholars. *Coordinating Robot-to-Robot Task Handoffs for Heterogeneous Robot Teams*. Funding \$2000, submitted 10/2025.

## Courses

### Developed

CPE 416 (GoBilda)

*Taught*

CPE 416, CPE 225

### **Undergraduate Research**

- Believe, Educate & Empower, Advocate, Collaborate, Nurture (BEACoN) Research Scholars. *Integrating Machine Learning for Enhanced Navigation in Mobile Robots*. Jorge Ramirez\* & Jay Rajesh\*, 01/2025-06/2025. [Symposium Link](#).

### **Graduate Students**

- Wyatt Colburn\*. Committee: Carlos Diaz Alvarenga (Chair), John Oliver, John Seng. *Hallucination Techniques for Self-Supervised Synthetic Datasets for Mobile Robots*. 09/2024-11/2025.

### **Service**

*Department*

- CPE Tutoring Center Advisor, 2024-25 academic year.
- CPE Scholarship Committee, 2024-25 academic year.
- RED Committee Co-Lead, Student Wellness and Growth Committee. 2024-25 academic year.

*Professional Society*

Program committee member:

- AAMAS 2025
- AAMAS 2026