CHRISTOPHER TATSCH

ROBOTICS ENGINEER

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SUMMARY

A driven academic fueled by a fervent enthusiasm for robotics and its transformative potential. I've been privileged to contribute in a diverse range of robotics projects, each presenting its unique blend of challenges and opportunities Seeking to apply for an industry position in robotics, perception, or machine learning and improve robots' ability to function in increasingly complex environments.

EXPERIENCE

Graduate Research Assistant

West Virginia University, Interactive Robotics Lab 2018-2024

Precision Pollination Robot (2018-2020).

- Manipulation path planning and visual servoing for pollinating bramble flowers using a robotic arm.
- Development of the state machine for a completely autonomous pollination sequence.

NASA Space Robotics Challenge (2020-2022)

- Multi-robot object detection system and terrain analysis algorithm which empowered our team's robots to navigate, perceive, and interact with the simulated lunar environment.
- Development of a set of approach maneuvers that dictated how our robots would engage with each other and their surroundings throughout the competition.

Autonomous Robots for Underground Stone Mining Safety (2021-2024)

- Rhino robot and its navigation system for operating autonomously inside underground environments, including the development of simulation with similar capabilities.
- Development of semantic-based exploration methods for underground mine exploration.

Stickbug - Co-robot for Precision Pollination (2022-2024)

- Setting the multi-robot architecture for Stickbug, which comprises 6 robotic arms connected to an omnidirectional kiwi drive base.
- Development of an autonomous navigation system for the robot drive base.

Engineering Intern

ROBOTIS Inc 2017

Seoul, South Korea

- Internship worked for the Open-Source team on the development of robot Turtlebot 3 and its applications
- Autonomous Navigation Calibration
- Development of new follower demonstration based on 2D Lidar only.

SELECTED PUBLICATION

Tatsch, Christopher, et al. **Dimitri: an Open-Source Humanoid Robot with Compliant Joint.** Journal Article Journal of Intelligent & Robotic Systems, 2017.

Tatsch, Christopher, et al. **Rhino: An Autonomous Robot for Mapping Underground Mine Environments.** 2023 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM). IEEE, 2023.

Martinez Rocamora Jr, B., Kilic, C., Tatsch, C., Pereira, G. A., & Gross, J. N. **Multi-robot cooperation for lunar In-Situ resource utilization.** Frontiers in Robotics and AI, 2023

SKILLS

Software: ROS/ROS2, Gazebo, Nvidia Isaac, Docker, TensorFlow, Pytorch, Open3D, PCL, OpenCV, Google OR, MATLAB, Linux, Microsoft Office, and several "CAD" software

Computer Languages: Python, C++

Soft Skills: Problem Solving, Teamwork, Critical Thinking, Decision Making, Flexibility, Research, Communication

LANGUAGES

Portuguese	**Native**
English	**Fluent**

EDUCATION

Bachelor's Degree in Electrical Engineering

Universidade Federal de Santa Maria

2012-2017

Master's Degree in Mechanical Engineering

West Virginia University

2018-2020

Thesis: Route Planning for long-term robotics missions

PhD Degree in Mechanical Engineering

West Virginia University

2020-2024

Dissertation: Enhancing Robotic Exploration through Semantically Guided Sampling Strategies

Non-degree International Student

Rochester Institute of Technology

2013-2014

HONORS AND AWARDS

- Recipient of the **Young Talents for Science Program, CAPES** - Fundação Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Brazil)
- Recipient of the **Brazil Scientific Mobility Program -** full scholarship grant for a year of study in the United States from CNPQ - National Council for Scientific and Technological Development (Brazil)
- **NASA Space Robotics Challenge Phase 2** Team Mountaineer Perception Leader - $30,000 prize Nasa