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Nathaniel Burgdorfer

Education

Ph.D. in Computer Science, Stevens Institute of Technology, *Hoboken, NJ* 2025
- **GPA** – 4.00

M.Sc. in Machine Learning, Stevens Institute of Technology, *Hoboken, NJ* 2020
- **GPA** – 3.95

B.Sc. in Computer Science, Stevens Institute of Technology, *Hoboken, NJ* 2020
- **GPA** – 3.87
- **TA**: CS-392 Systems Programming, CS-511 Concurrent Programming, CS-284 Data Structures, CS-383 Computer Organization and Programming
- **Upsilon Pi Epsilon**, Member of the International Honor Society for the Computing and Information Disciplines
- **Honors**, Dean's List, Graduated with High Honors

Professional Experience

Research Intern - 3D Computer Vision, InnoPeak Technology, *Palo Alto, CA* May 2023 – Aug 2023
- Collaborations with the AR/VR team to perform research in the area of 3D Computer Vision.
- Research topics focused on Multi-View Stereo depth estimation, 3D Implicit Reconstruction, Differentiable Volume Rendering, and Implicit Dense SLAM.

Software Engineer - Embedded Systems, L3Harris Technologies, *Clifton, NJ* Jan 2021 – Aug 2021
- Development of core radar systems capabilities. (C++)
- VxWorks kernel modifications and development. (C++)
- Implementation of embedded multicore capabilities. (C++)

Software Engineering Intern - Masters, L3Harris Technologies, *Clifton, NJ* Jun 2020 – Aug 2020
- Development on embedded systems algorithms involving Radar technology and signal processing. (C++)
- Integrating automation and data collection into existing unit tests for signal processing algorithms. (C++)

Senior Design, Zebra Technologies, *Hoboken, NJ* Sep 2019 – May 2020
- Developing a real-time image recognition pipeline for shipping container detection and classification. (C++, Python, TensorFlow)
- Developing a real-time 2D object pose estimation pipeline for shipping container CAD model alignment. (C++, Python)

Software Developer, DexterityDB, *Hoboken, NJ* Dec 2018 – Jun 2020
- Developing parts of the company's core engine with a small team of systems developers (C++, Rust)
- Implementing build and test servers utilizing docker containers and cloud services. (Python, Bash, GCP)
- Enhancing and extending plugin features of the database engine. (C++)

Research Interests

- Binocular and Multi-View Stereo
- Monocular Depth Estimation from Video
- Surface Reconstruction

Publications

- **Burgdorfer, N.** and Mordohai, P.. *V-FUSE: Volumetric Depth Map Fusion with Long-Range Constraints.* IEEE/CVF International Conference on Computer Vision (ICCV), 2023.
- Wang, W., Joshi, B., **Burgdorfer, N.**, Batsos, K., Quattrini Li, A., Mordohai, P., and Rekleitis, I.. *Real-Time Dense 3D Mapping of Underwater Environments.* IEEE International Conference on Robotics and Automation (ICRA), 2023.
- Xanthidis, M., Joshi, B., Roznere, M., Wang, W., **Burgdorfer, N.**, Quattrini Li, A., Mordohai, P., Nelakuditi, S., and Rekleitis, I.. *Towards Mapping of Underwater Structures by a Team of Autonomous Underwater Vehicles.* International Symposium of Robotics Research (ISRR), 2022.
- Joshi, B., Xanthidis, M., Roznere, M., **Burgdorfer, N.**, Mordohai, P., Quattrini Li, A., and Rekleitis, I.. *Underwater Exploration and Mapping.* IEEE/OES Autonomous Underwater Vehicles Symposium (AUV), 2022.

Teaching Assistantships

- CS 559 - Machine Learning (TA) — Spring 2023
- CS 146 - Intro to Web Programming (TA) — Fall 2022
- CS 392 - Systems Programming (CA) — Spring 2020
- CS 511 - Concurrent Programming (CA) — Fall 2019
- CS 284 - Data Structures (CA) — Spring 2019
- CS 383 - Computer Organization and Programming (CA) — Fall 2018
- CS 284 - Data Structures (CA) — Spring 2018

Programming Languages & Libraries

- Python, C++, C, C#
- PyTorch, OpenCV, Open3D, TensorFlow