Jonathan Bucher

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Games Portfolio | GitHub | Itch.io | LinkedIn

EDUCATION

2023 - 2026 **Technical University of Munich** M.Sc. Informatics
- Grade: 1.6/5.0 (German scale - 1.0 is highest)
- Thesis: Redesigned a voxel-based flood-fill algorithm using a chunk-based, data-oriented approach with Unity's C# Job System and Burst compiler

2025 **École Polytechnique de Montréal** Exchange Semester
- Built AI agent behaviors in Unreal Engine: pathfinding, obstacle avoidance, navigation meshes, and physics-based locomotion

2024 **Norwegian University of Science and Technology** Exchange Semester
- Implemented a stylized water shader in C++/OpenGL, with toggleable rendering stages demonstrating progressive shader construction

2019 - 2023 **Technical University of Munich** B.Sc. Informatics: Games Engineering
- Grade: 1.9/5.0 (German scale - 1.0 is highest)
- Thesis: Designed formal spatial representations for machine learning based AI players in a 4X strategy game using Unity's ML Agents
- Coursework spanning real-time rendering (OpenGL), game physics, low-level & OS programming in C++, and parallel programming

WORK EXPERIENCE

2023 **Software Engineering Intern - Itestra**
- Data migration from legacy system using Java, PostgreSQL, Elasticsearch, and Spring Boot

2023 **Full Stack Developer Intern - Medigital**
- Developed web app for hospitals using React, Django, TypeScript, and Python

PROJECTS & PROGRAMMING EXPERTISE

2025 **Voxel-Based Spatial Partitioning Algorithm - M.Sc. Thesis, TUM**
- Developed chunk-based parallel voxel flood fill algorithm using Unity C# Jobs
- Rewrote codebase to utilize Burst-compatible C#
- Optimized data layout to improve caching behavior and reduce memory footprint
- Drastically improved scalability, performance (highest speedup over x71) and theoretical complexity of queries (linear to amortized constant)
- Built tooling for validation and benchmarking; received highest possible grade

2025 **Autonomous Drone - Mobile Robotics Practicals, TUM**
- Built a full autonomous navigation pipeline in C++, including camera projection, visual-inertial localization, sparse landmark matching, and feedback-controlled pathfinding under real-time frame-time constraints
- Implementation in C++ with a reverse-engineered extended API
- Completed the task in 25 seconds, fastest of 8 teams and well under the 40-second threshold for top grade

2025 **VR Alchemy Game - École Polytechnique**
- Developed gameplay systems and a movement-aware URP liquid shader for VR

SKILLS & INTERESTS

Languages	German (native), English (fluent), French (B1), Norwegian (A1)
Technology	C++, Unity, C#, DirectX, OpenGL, C, Python, Java, SQL, Linux
Tools	Unity (advanced), Godot, Unreal Engine (basic), Linux, Git, Blender
Interests	Language Learning, Board Games, FPV Drones