# Thomas STUCKY

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## Skills and Tools

**Computer Languages**. C++, Python, GDScript, C#, PLEXIL
**Software**. Godot Game Engine, Unity Game Engine, ROS, Gazebo, Unix, Git, Jira, GNU Debugger, Aseprite, Blender
**Science and Engineering**. Gameplay programming, computational physics, space mission design, autonomous systems

## Work Experience

| SELF-EMPLOYED | Salt Lake City, UT |
|---|---|
| *Godot Engine Developer* | *May 2019 - Present* |

**Gameplay Programming**. Implemented physics-based gameplay, platformer mechanics, UI, and dynamic rigid-body fracturing in both GDScript and C++ GDNative.

**Game Design & Storyboarding**. Written several design documents and storyboarded scenes and animations.

**Project Management**. Managed a team of 5 to create The Last Slice for a two week game jam in which we won 3rd.

| KBR INC. | Salt Lake City, UT |
|---|---|
| *Software Engineer* | *September 2020 - Present* |

**Voxel-based Terrain Composition**. Designed and developed a Gazebo plugin that superimposes a 3D material distribution over a terrain model.

**ROS Action Infrastructure**. Refactored over 3k lines of scripts into a more modular and robust python package.

**Unit & Integration Testing**. Built a framework for testing in rostest and Python's unittest package.

| SETI INSTITUTE | Mountain View, CA |
|---|---|
| *Systems Developer* | *May 2017 - July 2020* |

**Physics Engines**. Modeled off-world lander terrain interactions (e.g. scooping, digging, poking) using discrete element method to simulate granular material.

**Embedded Software**. Payload software lead for a Mars-analogue rover that demonstrated autonomous sample handling, scientific instruments, and operational procedures at Mars analogue sites in the Atacama Desert.

| NASA AMES RESEARCH CENTER | Mountain View, CA |
|---|---|
| *Research Intern promoted to Consultant* | *July 2015 - May 2017* |

**Data Science and Visualization**. Scripted a Python data pipeline to post-process and visualize drill telemetry to provide drill engineers and geologists with valuable subsurface data.

**Fault Detection, Isolation, and Recovery**. Designed and iterated upon autonomous fault diagnostics and recovery algorithms for a flight-like Mars drill.

| UNIVERSITY OF WISCONSIN-MADISON | Madison, WI |
|---|---|
| *Research Intern* | *Summer 2013* |

**Radio Astronomy**. Modeled a radio interferometer telescope to optimize antenna baseline for a target signal.

| UNIVERSITY OF UTAH | Salt Lake City, UT |
|---|---|
| *Research and Teacher Assistant* | *August 2012 - May 2015* |

**Data Mining**. Scripted an anomaly detection algorithm to search the Kepler space telescope dataset for light curves that indicate a collision of two extrasolar bodies.

**Teaching**. Taught discussion sections for General Physics Mechanics and E&M.

## Volunteering & Leadership

| CARL SAGAN CENTER FOR RESEARCH, SETI INSTITUTE | Mountain View, CA |
|---|---|
| *Vice Chair, Astrobiology Group* | *May 2018 - May 2020* |
| UNIVERSITY OF UTAH | Salt Lake City, UT |
| *Telescope Operator and Tour Guide to the Night Sky* | *October 2010 - May 2015* |

## Awards

| KBR INC. TEAM RECOGNITION AWARD | Moffett Field, CA |
|---|---|
| *Ocean Worlds Autonomy Testbed for Exploration Research & Simulation* | *April 4th, 2024* |
| NASA GROUP ACHIEVEMENT AWARD (x2) | Moffett Field, CA |
| *Atacama Rover Astrobiology Drilling Studies and Life-detection Mars Analog Project* | *September 28th, 2022* |
| SCIENCE HACK DAY | San Francisco, CA |
| *Best Interactive Hack* | *October 20th, 2019* |

## Education

| UNIVERSITY OF UTAH | Salt Lake City, UT |
|---|---|
| *Physics B.S., Applied Mathematics B.S., and Astronomy minor* | *2015* |