TECH LEAD JOB POSITION

B612 Foundation's Asteroid Institute is looking for a Tech Lead who will help build the first open, extensible, cloud-based solar system mapping platform. This is an opportunity for someone who wants to drive the development of space to create the fundamental map which will be used for scientific exploration of the solar system, commercial development of space, and protection of the Earth from asteroid impacts. The Space Map is fundamentally different from terrestrial maps in that every celestial object is in constant motion obeying the laws of celestial mechanics, and thus is inherently 4-dimensional (3 spatial dimensions plus time). The base map will include the planets as well as millions of asteroids. For background on the historical importance of mapping to the opening of frontiers, and on the need for a Space Map, see [Charting the High Frontier of Space](#).

The team you will help lead and manage is launching a scalable software platform that will make analyzing, depicting, and sharing location and trajectory information in space as straightforward as using Google Maps. The Space Map will be based on the Asteroid Discovery, Analysis and Mapping (ADAM) platform which is used to model and analyze asteroid orbits and to study candidate space missions including commercial, scientific and deflection missions. Researchers currently use ADAM to map and understand asteroid trajectories: discover new asteroids from data collected by the largest telescopes in the world, run orbit calculations at large scale, and assess the probabilities that individual asteroids could hit Earth.

Among the engineering challenges for the Space Map include validating correctness and self-consistency of the calculations, as well as robustness and scalability of the platform. Many of the astrodynamics algorithms underlying the ADAM platform were originally developed for use on single core computers and designed to be run by subject matter experts. These algorithms were not originally intended to scale up to the potential offered by modern cloud computing platforms, nor were they designed to run automatically and transparently in the background. Since tens of thousands of calculations may be run at a time, there are challenges in how jobs are scaled out, how progress is monitored, and how the results are combined to form meaningful information. The ADAM infrastructure is built on the Google Cloud Platform, with the backends written in a combination of Python and Java and the client-side software written in Python (and open source).

In this position, you will be tasked with organizing and growing the Space Map team (including hiring ~6 new software developers) to achieve this goal. The new positions will supplement the paid and volunteer team. You will work closely with experts at the Asteroid Institute and LSST scientists at the University of Washington's DiRAC Institute to set priorities and plans, formulate a development strategy, and lead the development team in its execution. You will provide technical leadership, helping your team make the initial releases, laying the foundations for the infrastructure, and establishing the development processes.

ROLE DESCRIPTION

Core responsibilities will include:

- Leading the development team in building and operating the ADAM Platform.

- Taking ownership: this is a small established distributed team with both paid staff and volunteers, and whoever takes this role will set the vision and culture for the current and future team.

- Hands on supervision and technical leadership of a multi-site team of Software Engineers and astrodynamicists to include hiring and training, managing design and implementation of the system, setting development priorities and schedules, as well as actually writing code.

- Working with the Product Manager to meet the needs and priorities of the astronomical and commercial space community

- Manage the professional growth and development of the engineering teams.

You should demonstrate:

- Strong written and verbal communication skills with the ability to present complex technical information in a clear and concise manner to a variety of audiences

- Experience leading a high performing team that has deployed and maintained cloud services

- Willingness to learn astrodynamics and orbital dynamics

- Background in physics, astronomy, or a related field is a strong plus

- Experience with Cloud architectures (e.g. Google Cloud, AWS, Azure)
    - General understanding of cloud offerings (ideally GCP) and scalable architectures
    - Understanding of tiered architectures and load balancing
    - Understanding of failure management in a distributed system

Qualifications:

Bachelor's degree or equivalent experience in CS, Electrical Engineering, or related field required. Masters or PhD in Physics, Astronomy, or related fields is a strong plus.

Minimum of 8 years of relevant experience required. 10 years of experience in software engineering including 5 years of related project management experience in a highly complex scientific or technical environment highly desired.

The employment conditions for this position follow the legal regulations in California. The company is an equal opportunity employer and in particular, strives to increase the percentage of women and minorities in leading positions. Therefore, qualified women and minority researchers are particularly encouraged to apply. This position is virtual/distributed. Ideally, the candidate would reside near San Francisco, Seattle, or Maryland but it is NOT a requirement.

HOW TO APPLY

Candidates with the appropriate qualifications are invited to submit their applications including:

- Cover letter telling us why you'd be enthusiastic to work on the Space Map, and what strengths you feel you would bring to leading and growing our team.

- Curriculum vitae or resume

- LinkedIn Page

- Lists of publications, patents and any past research funding (if any)

Please submit your materials and cover letter ensuring you address the selection criteria in the position description when you submit your materials.

This position will work closely with Asteroid Institute researchers and staff members. B612 Foundation is coordinating the search process.

Application Deadline: Applications accepted on a rolling basis

Current Status of Position: Accepting Applicants

Submit your complete application via email to jobs@b612foundation.org. No phone calls, please.

ABOUT B612 & ASTEROID INSTITUTE

B612 Foundation is the world's leading non-profit organization dedicated to protecting Earth from asteroid impacts. The organization's work is divided into two areas: public education and advocacy, and the development of new scientific and technological projects within the Asteroid Institute. The foundation is entirely funded by private donations. Founded in 2002, by visionary astronauts Dr. Edward T. Lu, and Russell (Rusty) Schweickart, Apollo 9. Collaborators include: Caltech, Jet Propulsion Lab (JPL), Southwest Research Institute (SwRI), Analytical Graphics Inc (AGI), Google Cloud, and Data Intensive Research in Astrophysics and Cosmology Center (DIRAC) at the University of Washington.

The Asteroid Institute is a program of B612 and is designed to be the international center of excellence for scientific collaboration on the discovery and deflection of asteroids as well as an incubator for new technologies. Current major projects within the Institute include: postdoctoral research fellowships; ADAM, an open-source cloud-based platform for asteroid discovery, analysis and mapping(ADAM); and the use of synthetic tracking as a means of increasing the rate of asteroid discovery. A key focus is the creation of a dynamic map of the inner solar system. The map will be a critical resource for planetary defense while contributing to our understanding of the origins of our Solar System and future space exploration.

The work of the Asteroid Institute is made possible through the support of a community of donors around the world including Tito's Handmade Vodka, the William K. Bowes, Jr. Foundation and three anonymous donors in addition to donors from 46 countries.