KEVIN GRIMES

4760 Templeton St, Apt 3224, Los Angeles, USA o 818-940-4727 o kevin.m.grimes@jpl.nasa.gov

linkedin.com/in/kmgrimes o github.jpl.nasa.gov/kgrimes o kevinmgrimes.com

Senior software engineer at NASA Jet Propulsion Laboratory supporting the Mars 2020 IDS and PDS Imaging Node projects. Graduated with a Master of Science degree in computer science from the University of Southern California, and with a Bachelor of Science degree in mathematics from Evangel University. Experienced in designing, architecting, and leading implementation of complex, mission-critical software systems in high-pressure environments.

SKILLS

PROGRAMMING LANGUAGES: Go, Java 12, Python, Bash, JavaScript, C++

TECHNOLOGIES: AWS, Docker, Kubernetes, Flagger, Istio, FluxCD, Terraform, ELK stack, Apache Solr, Linux, Github, Cameo System Modeler, VICAR, ISIS, Ansible

OTHER SKILLS: Cloud-native application development, team leadership, technical writing, requirements engineering, SysML modeling, public speaking, agile software development, object-oriented programming, microservice architectures, software cost estimation, linear algebra, image processing, JPL software process, message bus architectures

WORK EXPERIENCE

DEPUTY LEAD / July 2021 - present
Mars 2020 GDS Instrument Data System (IDS)
- Responsible for the successful delivery and operation of IDS's suite of mission-critical tools, including its image processing PCS, visualization platforms, and localization APIs
- Interacts with Science customers, formulating requirements from use cases and negotiating their priority
- Oversees a development team of about 15 people
- Presents project status at software reviews (ISR, ICR, SDR, etc.)
- Investigates software ISAs and oversees their resolution

COGNIZANT ENGINEER / September 2018 - present
Mars 2020 GDS IDS Pipeline & PLACES
- Delivers the IDS Pipeline PCS, a suite of over 100 processing pipelines that, every sol, generates hundreds of gigabytes of image data critical for rover planning
- Automates tactical analyst procedures, implements cost saving measures, and integrates IDS PGEs
- Leads a working group dedicated to improving Pipeline performance
- Trains Pipeline operators on correct usage of the system and provides tactical operations support
- Responsible for PLACES, an API built in Java and used by rover planners and mapping specialists to store and search the rover's position and attitude throughout its traverse

SYSTEMS ENGINEER / January 2017 - present
Planetary Data Systems Imaging Node (IMG)
- Architects, designs, and oversees development of the Image Atlas, a system offering an "Amazon-like" search experience for >1 PB of planetary imagery data to the scientific community. The system adheres to the microservice style, consisting of over a dozen components orchestrated by Kubernetes and running in AWS

- ○ Participates in requirement negotiation with the project manager, data providers, mission interfaces, and various other stakeholders in the planetary science community
- ○ Schedules development efforts and collaborates with the cognizant engineer to ensure their correctness and timely delivery
- ○ Interfaces with data providers to ensure timely delivery of their data to the archive
- ○ Maintains SysML model of IMG's software solutions
- ○ Represents IMG at conferences both domestic and international

COGNIZANT ENGINEER / January 2017 - 2020
Advanced Multi-Mission Operations System (AMMOS)
- ○ Maintained the Web Resource Platform ("WRP"), a suite of tools and SDKs that enabled programmatic access of image products, as well as their raster data and label information. Remote execution of image processing software was bundled with the suite
- ○ Maintained JEDI, a real-time analysis tool that rendered data products and their metadata as they are processed. Adapted JEDI for the InSight project
- ○ Provided operational support and training
- ○ Prototyped WRP Tiling Service, which leveraged the WRP Product Repository technology to cache image tiles in DZI format and provided them on-demand to clients such as OpenSeadragon

SOFTWARE ENGINEERING INTERN / Summer 2016
Jason-3
Worked with the Jason-3 team to redesign the pipeline used to ingest, parse, and process Jason-3 telemetry.

SOFTWARE ENGINEERING INTERN / Summer 2015
Ocean Surface Topography Mission / Jason-2
Worked collaboratively with another intern to develop a visualization suite to assist the Ocean Surface Topography Mission in analyzing Jason-2 telemetry.

EDUCATION

MASTER OF SCIENCE, COMPUTER SCIENCE / August 2017 – December 2020
University of Southern California, Los Angeles, USA

BACHELOR OF SCIENCE, MATHEMATICS / August 2013 – December 2016
Evangel University, Springfield, USA

SELECT PUBLICATIONS

"Searching the Stars with Atlas IV" (2022, Madrid, Spain). https://kevinmgrimes.com/post/search-stars-atlas4-2022-update/. Grimes, Kevin M.; Soliman, Tariq K.; Natha, Anilkumar M.; McAuley, Michael M. Presented at Planetary Science Informatics and Data Analytics conference.

"Cloud Processing of PDS Archival Products" (2021, virtual). https://kevinmgrimes.com/post/cloud-pds-archive-processing-post/. Grimes, Kevin M.; Verma, Rishi; McAuley, Michael M.; Soliman, Tariq K.; Taylor, Zachary M. Presented at the 5th Planetary Data Workshop.