Slesa Adhikari

Software Developer
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https://github.com/slesaad

Skills

Languages: Python, Javascript, C/C++
AWS (CDK, S3, Lambda, ECS, RDS, API Gateway, CloudFront, DynamoDB), Docker,
Scikit, Numpy, Scipy, rasterio, GDAL
ReactJS, jQuery, Sass, Leaflet, Mapbox, Cesium,
Django, FastAPI
Bash Scripting, Git, Linux, LaTeX
Scrum/Agile methodologies, JIRA, GitHub

Education

Master's in Computer Science, GPA 3.875
University of Alabama in Huntsville
2018-2020

Graduate Research Assistantship
AAUW International Master's Degree Fellowship
AAUW International Master's Degree Completion Fellowship
Thesis: *Detecting Periodic Action Patterns in Videos*

Bachelor's in Computer Engineering, 78.6%
Institute of Engineering, Pulchowk Campus
2012-2016

Full merit based undergraduate scholarship
Ncell Excellence Award, Ncell Pvt. Ltd.
Ncell Scholarship Award, Ncell Pvt. Ltd.
Graduated top 10 among 700 students

Experience

Computer Scientist III
April 2022 - present

Computer Scientist II
May 2021 - April 2022

Computer Scientist I
June 2020 - April 2020
Interagency Implementation and Advanced Concepts Team (IMPACT) | NASA/UAH

Inform project direction by working alongside stakeholders and project owners
Make technological and architectural decisions of the systems required and develop them
Work on a novel system that utilizes blockchain technology for Open Science
Architected and developed a large scale ingestion pipeline for earth science datasets
Worked as a sole owner on pyQuARC from the architecture design phase to package creation phase
Led the frontend team by making design decisions, mentoring and assigning tasks
Designed and implemented the frontend of the NASA Earth Science image labeling tool
Automatic and manual deployment for various products to AWS using CDK, Terraform, Github Workflows, Dockers, etc.
Worked with Neo4j graph database, graphQL, RESTful APIs
Worked on map visualizations, dynamic tiling, Cloud Optimized geotiffs, Shapefiles, etc.
Mentor interns and graduate research assistants
Onboard new team members and train them on the processes and technologies

AWS infrastructures, Airflow, Github Actions,, Hyperledger Fabric, FastAPI, ReactJS, terraform, Neo4j, Docker, Rest APIs, graphQL, Map visualization, Earth Science data - shapefiles, geotiffs, tiling service

Graduate Research Assistant
Global Hydrology Resource Center | NASA/UAH
May 2019 - May 2020

Data processing (python, numpy, zarr, xarray) of various earth science datasets
Optimized rendering speed of 3D web visualization of those large datasets

Cesium, Javascript Python, Numpy, Zarr, Xarray,

	Created a user palatable interface and experience Created RESTful APIs and deployed serverless framework to AWS Lambda using Terraform	*AWS, Lambda, Terraform, HTML, CSS, Panda3D*
Graduate Teaching Assistant University of Alabama in Huntsville August 2018 - May 2019	Grading, one-on-one tutoring of students and laboratory instruction	*C, Raspberry Pi, ARM*
Associate Software Developer Logic Information System Nepal November 2016 - May 2017	Design and implementation of data warehousing, reporting and archiving solutions for various international organizations including ***Petco*** and ***Matahari***	*Oracle, Teradata, Bash Scripting*
Intern Logic Information System Nepal January 2016 - September 2016	Design and implementation of a Virtual Reality system that constructed a partial 3D scene from 2D image/s	*C++, OpenGL, VR, Android*

Grants/Awards

2021	NASA Marshall Innovation Team Award for MAAP
2021	NASA Marshall Innovation Team Award for ImageLabeler
2019	AAUW International Master's Degree Completion Fellowship
2018	AAUW International Master's Degree Fellowship
2017	Ncell Excellence Award, Ncell Pvt. Ltd.
2014	Ncell Scholarship Award, Ncell Pvt. Ltd.
2012-2016	Silver Jubilee Scholarship, Indian Embassy.
2010-2012	Mahatma Gandhi Scholarship, Indian Embassy.
2016	Winner, Yomari CodeCamp, Yomari Inc.
2015	Winner, Software Competition in Open Category, LOCUS

Projects

Visualization, Exploration, and Data Analysis (VEDA)	An open-source science cyberinfrastructure for data processing, visualization, exploration, and geographic information systems (GIS) capabilities. Components include i. an interactive visualization and analysis dashboard, ii. data services for data storage, ingestion and publication, iii. an analysis platform (jupyterhub env) for science in the cloud [Python, AWS *(S3, Step Functions, ECS, Lambda, DynamoDB, Api Gateway, Managed Airflow, Cloudfront), Mapbox, Cloud Optimized Geotiffs, postgres, Spatio-Temporal Asset Catalog (STAC), FastAPI]*
Blockchain for Open Science	Decentralized blockchain system that enables researchers to validate the authenticity of datasets, tracks the provenance and lineage and verify ownership *[Hyperledger Fabric, AWS managed blockchain, ExpressJS, Node, EC2]*
Multi-Mission Algorithm and Analysis Platform (MAAP)	A system that allows collaborative sharing of biomass data from NASA and ESA and provides an application development environment to develop and share algorithms relating to the data and a platform to visualize the data - everything on the cloud *[Python, Javascript, ReactJS, AWS (S3, Step Functions, ECS, Lambda, DynamoDB) , Mapbox, Cloud Optimized Geotiffs]* **Winner**, *NASA Marshall Innovation Award*, 2021
pyQuARC	A package designed to provide automatic quality assessment metadata in NASA's Common Metadata Repository (CMR), which is a centralized metadata repository for all of NASA's Earth observation data products. *[Python, packaging, pypi]*

ImageLabeler	A web tool that facilitates the creation and management of labeled Earth Science images for use in Machine Learning models. Features include extracting images from satellite imagery, drawing bounding boxes, team management for labelers, support for shapefiles and geotiffs. *[Python, Django, REST Apis, ReactJS, redux, docker, AWS (S3, ECS, RDS)]* **Winner**, *NASA Marshall Innovation Award*, 2021
Video Repetition Finder	Detecting periodic action patterns in videos; thesis work for Master's degree program *[Python, Keras, ConvNet, OpenCV]*
Unity Crowd Renderer	Real-time crowd rendering (more than 10,000 3D animated instances) in Unity Game Engine with vastly improved performance (30 fps vs 4 fps) over existing tools *[C#, GLSL]*
Dimension223	Partial reconstruction of 3D scene from 2D image/s with VR support *[C++, OpenCV, OpenGL, VR, Java, Android, Sockets]*
BatSS	Blind Signal Separation (separation of a set of source signals from a set of mixed signals, without the aid of information about the source signals or the mixing process) using neural networks and parallel computation in GPU *[Python, Numpy, OpenCL]*
Document Classification	Natural Language Processing applied to the task of document classification done as a part of research work for identifying the coverage of technology news in Nepali newspapers; Naive Bayes Classifier and Support Vector Machines were explored *[Python, Numpy, Scikit, NLP]*
Yatra	Collaborative Filtering based recommender implemented in a travel web application *[Google Maps, Django, Python]* **Winner**, *Yomari CodeCamp*, 2016
Flipped	2D platform adventure game for Android *[Java, Box2D, Photoshop, Illustrator]* **Finalist**, *Ncell App Camp*, 2015
Handsfree	Hand gesture input tool for PC *[C++, OpenCV]* **Winner**, *LOCUS Software Competition*, 2014

Presentations and Posters (and collaborations)

A Cloud-Native Workflow for Publishing, Discovering, Processing, and Visualizing Geospatial Data (presentation)
Americal Geophysical Union (AGU), 2022, Chicago, AL

Empowering Infrastructures to Enable Open Science: The Multi-Mission Algorithm and Analysis Platform (MAAP) Data System (presentation)
AGU, 2022, Chicago, IL

Trend Analysis of AI/ML Tools and Services in NASA (Poster)
AGU 2021, New Orleans, LA

Information Extraction on an Earth Science Knowledge Graphs with Semantic Parsing (Poster)
AGU, 2021, New Orleans, LA

pyQuARC: Open Source Library for Earth Observation Metadata Quality Assessment (Presentation)
AGU, 2021, New Orleans, LA

QuARC: Development of a Service to Enable FAIR-er Metadata (Poster)
AGU 2021, New Orleans, LA

pyQuARC: Development of a Service to Enable FAIR-er Metadata (Presentation)
Earth Science Information Partners (ESIP) 2022, Pittsburg, PA