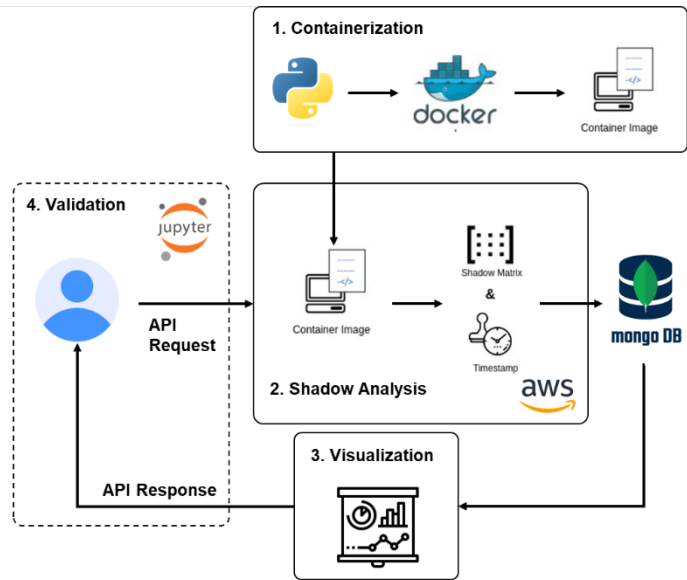


Deploy Python Application to AWS

Objective. This assignment serves as an evaluation of applicants for student worker positions within the Smart Construction, Smart City, & Smart Building Research Lab.

Overview. Our research lab seeks your expertise in deploying a Python application on Amazon Web Services (AWS) to facilitate cloud-based shadow analysis and data storage. Specifically, the implementation should:

1. **Containerization:** Containerize the Python application into a Docker image and host it on AWS.
2. **Shadow Analysis:** Perform shadow analysis based on the current timestamp, generate a shadow matrix, and store the results in MongoDB.
3. **Visualization:** Visualize the shadow matrix effectively, presenting data from MongoDB in the most informative manner (e.g. heat maps or matplots).
4. **Validation:** Validate the successful execution of the above steps using a Python demonstration in Jupyter Notebook. This demonstration should involve user requests for shadow analysis via the API.



Q&A Session. On Friday, October 13th, between 11 AM and 2 PM, we will host a 20-minute Q&A session per request via Zoom. You are encouraged to participate and ask any questions related to the assignment during this session. Should you wish to attend, kindly request to schedule the Zoom meeting via email.

Submission. Interested applicants should submit their assignments by Tuesday, October 17th, via email to the following addresses: yoojun@tamu.edu, aarthi1508@tamu.edu, and yham@tamu.edu.

Attachments. (1) Python Code: Shadow_Analysis.zip and (2) Free Tier Limits for the Assignment.pdf