# Harrod Tang

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## WORK EXPERIENCE

**Nielsen**

Software Engineer - Platform Tools DevOps Team                                July 2022 - Present
- **Platform Tools Console** - a next-gen resource manager for Platform services
  - Led a team of 5 engineers in the inception and development of the application from architecture to deployment at scale across 3 AWS regions.
  - Utilized by 100+ internal teams to onboard onto our Platform services, spinning up 1000+ ephemeral Kubernetes pods to create respective resources.
  - Enables teams to self-manage resources, reducing the amount of support requests by 80%.
  - Mentored 2 new engineers, streamlining their ramp-up time by holding knowledge transfer sessions and regular check-ins.
  - Wrote unit and integration tests, resulting in stable production releases and reduced downtime.
  - Constructed images with Docker and deployed onto Kubernetes clusters via Helm charts for scalable deployments.
  - Automated builds, tests, and deployments with GitLab CI/CD pipelines, removing the need for manual intervention.
  - Technologies: React, Golang, Python, AWS (SQS, RDS), Docker, Kubernetes, Helm, GitLab CI/CD, PostgreSQL.

- **Internal Generative AI Chatbot** - Nielsen's ChatGPT replacement
  - Improved system reliability by creating a horizontally scalable solution that persists conversation history in an external store.
  - Implemented conversation summarization, reducing storage requirements by 50% for each conversation.
  - Released company-wide and used by 3000 monthly users, streamlining the employee training process for multiple teams and improving onboarding efficiency by 50%.
  - Implemented a RAG architecture with AWS Kendra to provide employees with a generative AI application that has access to the company's internal documentation, mitigating potential security risks.
  - Technologies: Python, FastAPI, LangChain, AWS (Kendra, Bedrock, DocumentDB), Google Vertex AI, TypeScript.

- **Platform's Identity and Access Management (IAM) Application**
  - Provides the team with full control over Okta resources, eliminating reliance on another team for Okta changes, saving an estimated 500+ hours annually.
  - Automated the safe and seamless migration of 280+ Okta groups and 1000+ users from one Okta tenant to another.
  - Implemented detailed auditing by leveraging SQLAlchemy to record all operations and outcomes into a PostgreSQL table.
  - Technologies: Python, Flask, AWS (Route53, ACM), Docker, Kubernetes, Helm, GitLab CI/CD, PostgreSQL.

- **Apache Airflow as a Service**
  - Performed verification testing to assess the resiliency and viability of migrating from Apache Airflow 1.10 to 2.5 for 840+ Airflow instances running on Kubernetes, ensuring a smooth upgrade process for 100+ internal teams.
  - Conducted extensive stress testing with python and shell scripts, loading and triggering thousands of DAGs in the DAGBag.
  - Technologies: Apache Airflow, Python, Shell Scripting.

- **GitLab Runners as a Service**
  - Automated the end-to-end onboarding process, eliminating manual intervention and reducing onboarding time by 70%.
  - Utilized by 50+ teams to self-issue their own GitLab runners, which are responsible for running their CI/CD pipelines.
  - Technologies: React, Java, PostgreSQL.

Software Engineer Intern - Platform Tools DevOps Team                                June 2021 - August 2021
- **Cost Savings Algorithm**
  - Designed and implemented an algorithm that identifies optimal hours to scale server resources, saving $200,000 annually.

## TECHNICAL SKILLS

**Expertise**: Cloud Computing, Full Stack Development, DevOps, Generative AI, Unit Testing
**Tools**: AWS, Kubernetes, Docker, GitLab CI/CD, Helm, Git, Okta, PostgreSQL, Terraform, Packer, Airflow, Spark
**Languages**: Python, JavaScript (React), Golang, Java

## EDUCATION

University of California, Davis                                                                                Davis, California
Bachelor of Science in Computer Science (GPA: 3.768)                                September 2018 – June 2022