Harper Beeson

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Launched Products and Projects   details in portfolio ^

ABET-Tracker:
- **What is it:** Cloud service web-app for universities that collects student performance information, calculates professor performance metrics over time, and creates documentation for accrediting agencies such as ABET.
- I solely conceived, developed, and launched the product in 4 months, following SDLC guidelines. It features over 10,000 lines of Django backend code, a custom, lightweight JavaScript framework, a PostgreSQL database, and is hosted using AWS EC2, RDS, and S3 instances.
- Used by the University of Southern Mississippi to completely automate their ABET reporting process and track the performance of and compare professors in the School of Computing Sciences.
- I implemented a custom AWS lambda function that automatically starts and stops the cloud infrastructure when needed: this decreased the price of the system from $540 annually to $45 on average.

Expression:
- **What is it:** State-of-the-art machine learning model I created that uses a proprietary infrastructure to regress 70 facial landmarks and continuously refine its initial predictions, increasing accuracy by an average of 11%.
- Currently achieves an NME of 3.4 on a synthetic test set equivalent to the *Common 300W* dataset.
- Currently training on a custom synthetic dataset that features over 2,000 facial landmark notations per sample with landmark depth and expression labels, a first in the industry.
- I implemented a custom gaussian log likelihood loss function that trains the model in an unsupervised fashion to output its uncertainty for each of its landmark predictions.

Unreal AI & Animation Extender:
- **What is it:** C++ Unreal Engine module that extends the AI and animation capabilities of the engine.
- Features an environmental query system that allows multiple AI agents to coordinate positional changes based on player visibility; creates complex, group-based, emergent behavior.
- Allows AI agents to dynamically alter their animations at runtime; this decreases the animation workload by 8x by removing the need for blend spaces.

Programming Experience

- 8+ years: C++, Unreal Engine, HTML, CSS, Git
- 2+ years: Python, JavaScript, C#, C, Django, Flutter, SQL, EC2, S3, RDS
- 1+ years: TensorFlow, PyTorch

Relevant Work Experience

Founder & Machine Learning Engineer
Beeson LLC   2022 - Present
- Lead a team of 8 computer science engineers for researching and implementing computer vision capabilities in autonomous agricultural drones.
- Launched 4 quarterly updates to ABET-Tracker, increasing the security and capabilities of the system.
- Setup and maintained ABET-Tracker servers for the University of Southern Mississippi for a year.

Software Engineer Intern
University of Southern Mississippi   2021 - 2022
- Designed a database schema and software solution for collecting and processing the college's ABET data: scaled the solution into ABET-Tracker.
- Fully documented the entire development, met deadlines, and delivered more than originally promised.

Education

Computer Science B.S.   4.0 GPA   University of Southern Mississippi, 2023