Sharkey spearheads software development

Eric Sharkey, MS

For the past year, in addition to rigorous studies as an SC grad student, Eric Sharkey has been working as a machine learning engineering intern at NewSci Labs, a machine learning/artificial intelligence think tank located in Tallahassee. The goal of NewSci is to use and develop state-of-the-art AI technologies to improve the public, health, and education sectors; the company develops novel AI-powered products and makes them available to industry.

Recently, the primary project Sharkey has worked on since interning at NewSci - Call Simulator -has been launched. "Call Simulator is an AI powered training program that we've developed over the past few years that can simulate a caller in an emergency situation," said Sharkey. "We use Natural Language Understanding techniques to comprehend the operator, and Natural Language Generation techniques to create a realistic response for] our AI caller. Emergency call center operators need to be trained to respond appropriately to a large variety of situations. We plan to use this software to improve the training quality of emergency call center operators by exposing them to a wide range of scenarios for them to practice."

Nathan Crock, SC doctoral grad and NewSci Labs Director, is enthusiastic about the work Sharkey has done to launch Call Simulator as well. "Our Call Simulator is a quintessential example of an AI technology created in our lab consistent with our "AI for good" motto. It is now deployed around the world, improving 911 emergency telecommunicator training programs, and helping prepare them to save more lives. Eric Sharkey and the skills he acquired at the Department of Scientific Computing were invaluable in the creation of this technology," Crock said.

NewSci Labs' Call Simulator software vastly improves on current instruction protocols in training emergency call/911 operators. "Our software replaces human trainers with an AI system. Trainees can run simulations anywhere at anytime, and can practice any simulation

as much as they need," said Sharkey. "We automatically score the operators to determine how they performed and how they can improve. In the future, we're planning to expand to a number of different areas that use scripted calls, for example telehealth."

NewSci has been working on the simulator since 2018, building a number of interdependent components needed for launching the software. The first core component was the AI system used to identify and respond to scripted questions. "Over the years, we built different iterations to create more realistic responses. Moving forward we are planning to create new versions of our simulator that use more complex Natural Language Processing techniques to handle more complicated calls and create more robust simulations."

Another component of the software that benefitted from Sharkey's expertise is the system that streams audio from the user's microphone to the simulator, generates the caller's speech, and returns the speech to the user all in real time. "We recently integrated with ProQA Discovery, a browser based tool that operators can use to run simulations while practicing entering call information." Sharkey graduated with his MS in computational science in the summer 2021 class, and plans to continue his work on the project. "At NewSci Labs, I work with machine learning researchers and developers on interesting and challenging problems. It's been a great experience to work alongside the talented members of our team at NewSci, and I've learned and grown so much from them," Sharkey said. "I've accepted a full-time position as a machine learning engineer at NewSci, and I'm going to be the technical lead on developing the Call Simulator software."

Crock is glad to have Sharkey and his advanced knowledge on staff. "With the skillset Eric acquired in the Department of Scientific Computing's graduate program, he can approach various problems in the machine learning discipline," Crock said. "He is already helping us develop the next-generation simulator by creating faster and more efficient paraphrasing, text-style transfer, and efficient question-answering models."

For more, go to sc.fsu.edu & https://newsci.ai/.

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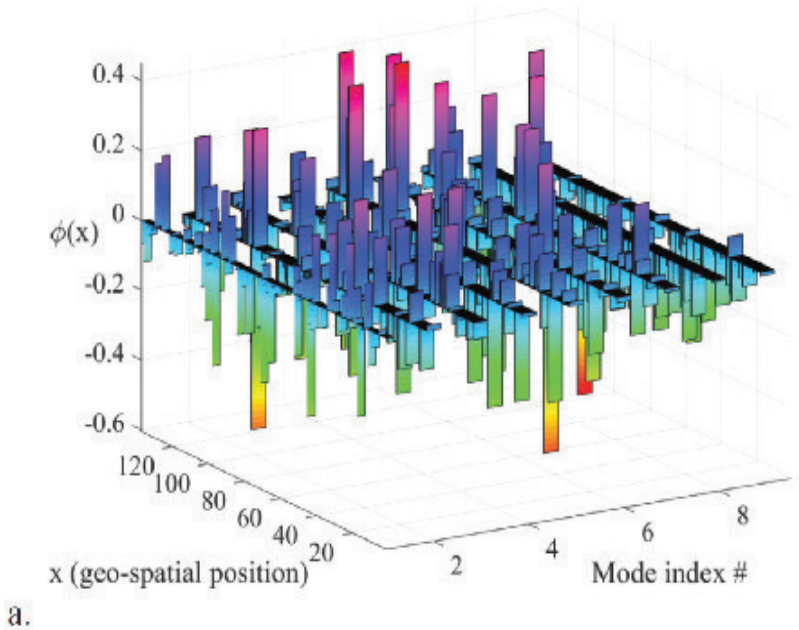
Washington in Seattle. These studies of infectious disease data used Dynamic Mode Decomposition, and I wanted to try using that model. DMD can analyze snapshots of infectious disease data from experiments, numerical simulations, or historical records to extract coherent spatiotemporal patterns.

"Data collected from separate spatial locations can be formed into vectors representing state snapshots that evolve in time. Prof Bistrian developed an ingenious economical way to implement DMD- the Randomized DMD.

"The dynamic modes discovered by



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The leading DMD modes used to generate the reduced order model.