

**MAS05**

## **OPTIMIZATION FOR DONKEYCAR AUTONOMOUS DRIVING MODELS: LEARNING RATE SCHEDULER INTEGRATION AND EVALUATION**

Yichi Cheng<sup>1</sup>, Emily Luo<sup>2</sup>, Wen Cheng<sup>1</sup>, Yukun Bu<sup>2</sup>, Jack Liu<sup>2</sup>

<sup>1</sup>Cal Poly Pomona, Pomona, California, USA. <sup>2</sup>Intern @Cal Poly Pomona, Pomona, California, USA

### **Abstract**

The study aims to optimize model training on the DonkeyCar platform by integrating a learning rate scheduler and systematically comparing hyperparameters. We analyzed the impact of different scheduler configurations on validation loss and monitored key metrics using TensorBoard. Results show that the scheduler improves model convergence, especially when the validation loss plateaus. By dynamically reducing the learning rate, further optimization is achieved. Adjustments to hyperparameters, such as patience, factor, and min learning rate were evaluated for their effects on performance and robustness across different random seeds, confirming the scheduler's effectiveness in autonomous driving tasks.

### **Conference Track**

Modeling and Simulation