**Jarvis**

**Student:** Shay Snyder [snyderse2@etsu.edu](mailto:snyderse2@etsu.edu)

**ETSU Faculty Mentor:** Ghaith Husari Ph.D. [husari@etsu.edu](mailto:husari@etsu.edu)

**ORNL Faculty Mentor:** Robert M. Patton Ph.D. [pattonrm@ornl.gov](mailto:pattonrm@ornl.gov)

**Learning Objectives**

* Use the Donkey Car platform to learn the fundamentals of autonomous vehicle design on small scale
* Use Keras w/ a TensorFlow backend to research and develop neuromorphic algorithms to pilot an RC car through simulated and real driving scenarios
  + Categorical Models
  + Linear Models
  + IMU Models
  + Latent Models
  + RNN Models
  + 3D Models
  + Behavior Models
  + Localizer Models
* Minor Learning Requirements
  + Matplotlib
  + Virtualization / Containerization
  + SSH
  + LaTeX
  + Github

**Reasons for Enrollment**

This study would allow me the opportunity to further expand my knowledge on the topic of neuromorphic algorithms and their application to autonomous vehicles.

**Methods of Study**

Shay will research the different types of algorithms, whether that be articles, publications, etc., and implement the aforementioned model types in various manners using the Donkey Car platform and simulator.

**Deliverables**

Throughout the semester, I will deliver various LaTeX documents in the form of pdf files to Dr. Husari, Dr. Patton, and any other individuals as required by ETSU. Every week I will be required to submit one formal document detailing the previous week’s work. The report schedule is laid out below:

* Weeks 1-3: technical report (1-2 pages)
* Week 4: technical report (3-5 pages)
* Weeks 5-7: technical report (1-2 pages)
* Week 8: technical report (3-5 pages)
* Weeks 9-11: technical report (1-2 pages)
* Weeks 12: technical report (3-5 pages)
* Weeks 13-15: technical report (1-2 pages)
* Week 16: culminating report (15-25 pages)

Shay will also hold meetings with Dr. Husari as time allows.

**Methods of Evaluation**

To be determined