A few options for the final project are listed below.

* Option 1: Choose one paper from the list I provide, understand the idea in the paper, and extend the result. For example, if you choose the paper “global convergence of policy gradient methods for the linear quadratic regulator”, you can think about how to extend some of the analysis there to LPV/LTV/switching systems.
* Option 2: Choose a control problem you are interested in. Then apply some RL methods covered in the course (or learned by yourself) to design a controller. Compare with the model-based solutions if available. Discuss your findings. What worked? What did not work? Summarize your findings and provide some comments for future investigations.
* Option 3: Choose an optimization algorithm that you are interested in. Apply the control methods covered in the class to analyze the algorithm and summarize your findings.
* Option 4: If you see a connection between control and learning that has never been explored in the literature, then your project can be just about establishing such a connection.
* Option 5: Write a survey on a certain topic at the intersection of control and machine learning. Read relevant papers and summarize the status of the field.

Treat the final report as an initial draft for some conference paper you will submit in the future.