Project 2: Robotics

1. From the notes in the course <http://www.cs.cmu.edu/~me/courses/811/> you will identify a set of algorithms for the following topics and implement them in the MatLab, Python, and Sage
2. [Solving Linear Equations](http://www.cs.cmu.edu/~me/courses/811/notes/Linear.pdf)
3. [Polynomial Approximations - Interpolation](http://www.cs.cmu.edu/~me/courses/811/notes/Polynomials.pdf)
4. [Solution of Nonlinear Equations](http://www.cs.cmu.edu/~me/courses/811/notes/RootsNonlinear.pdf)
5. [Roots of Polynomials](http://www.cs.cmu.edu/~me/courses/811/notes/RootsPoly.pdf)
6. [Resultants and Elimination Theory](http://www.cs.cmu.edu/~me/courses/811/notes/Resultants.pdf)
7. [Approximation](http://www.cs.cmu.edu/~me/courses/811/notes/Approximation.pdf)
8. [Differential Equations](http://www.cs.cmu.edu/~me/courses/811/notes/DiffEq.pdf)
9. [Optimization](http://www.cs.cmu.edu/~me/courses/811/notes/Optimization.pdf)

**Note that most of the algorithms in the above notes are covered in Houstis ebook and there are implementations in MatLab and Python**

1. Evaluate of MatLab, Python, Sage for the above algorithms
2. Presentation of the evaluation PSEs study
3. Complete the assignments 1-3 from the site <http://www.cs.cmu.edu/~me/courses/811/> in python or sage and implement the kinematics problems (PROBLEMS\_solutions.pdf file) in MatLab.
4. Resources: Foundations of Robotics by Yoshikawa (Houstis has a hard copy of the book you can borrow – try to find it a pdf copy of the book on the web, other resources are listed in the eclass)