# Introduction

- The **Computational Learning and Motor Control Lab** focuses its research on human movements such as walking and manipulation. This summer, I worked in the CLMC lab where I learned **trajectory planning** that will allow robotic maneuvers to be performed smoothly, thus allowing natural movement that are easier to control.

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# Project Objective and Results

My objective was to compute the **parameters** of the trajectory to create a **smooth and natural motion**.

To complete this project I was introduced to the concepts of:
- **Calculus**
- **Matrix Math**
- **Programming**

I learned how to program in **MATLAB**, a computational tool and programming language used for:
- **Linear Algebra**
- **Implementing Algorithms**
- **Data Visualization**

For my project, I wrote code for minimum jerk trajectory planning that produced a smooth:
- **Position** trajectory (x)
- **Velocity** trajectory (xd)
- **Acceleration** trajectory (xdd)

My SHINE experience really opened my eyes to:
- **the realities** of robotic programming
- **to question** if I wanted to pursue it in college and as a career

However, this actually:
- **strengthened** my passion to continue my effort in becoming a programmer
- **provided** me with **knowledge** needed to stand out in college applications

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# Important Skills Learned

There are many ideas and concepts I would like to share with my classmates:
- think about problems with out having the solution in mind
- in order to focus their attention on the methods used to solve the problem

This will allow them to:
- **master their skills in the methodology**
- **avoid discouragement** if they don’t get the out come they want.

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# Advice for Future SHINE Students

To all the future SHINE students who will participate in the CLMC lab, I advise you to:
- Not get discouraged if you don’t understand the many abstract concepts
- Take the MATLAB training seriously
- Not be afraid to ask questions when you truly don’t understand something
- And finally, always try to look up your questions online before consulting your mentor

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# Important Links

- Code I wrote that Computes State At Time
  - Emanuel Gonzalez
  - Sophia Mallaro
  - Dr. Katie Mills
  - Dr. Stefan Schaal

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# Acknowledgements

Thank you for the guidance and patience:
- Giovanni Sutanto
- Harry Su
- Sean Mason
- Luigi Massacci