

CMSC828T

Vision, Planning And Control In Aerial Robotics

INTRODUCTION

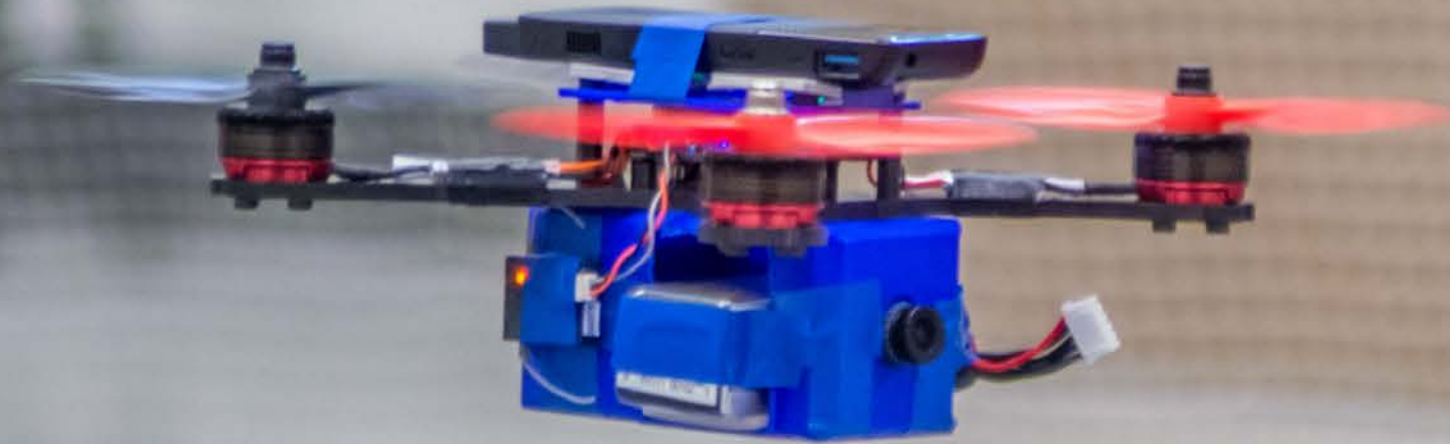
Yiannis Aloimonos

Nitin J. Sanket

Kanishka Ganguly

Snehash Shrestha





What is this course about?



Quadrotors

Kinematics

Dynamics

Control

Trajectory Planning

Pose Estimation

Computer Vision

Sensor Fusion

Hardware

Who is teaching?



Yiannis Aloimonos
Professor of Computer Science
[yiannis\[at\]cs\[dot\]umd\[dot\]edu](mailto:yiannis[at]cs[dot]umd[dot]edu)



Nitin J. Sanket
PhD Student
[nitin\[at\]cs\[dot\]umd\[dot\]edu](mailto:nitin[at]cs[dot]umd[dot]edu)



Kanishka Ganguly
PhD Student
[kganguly\[at\]cs\[dot\]umd\[dot\]edu](mailto:kganguly[at]cs[dot]umd[dot]edu)



Snehash Shrestha
PhD Student
[snehash\[at\]cs\[dot\]umd\[dot\]edu](mailto:snehash[at]cs[dot]umd[dot]edu)

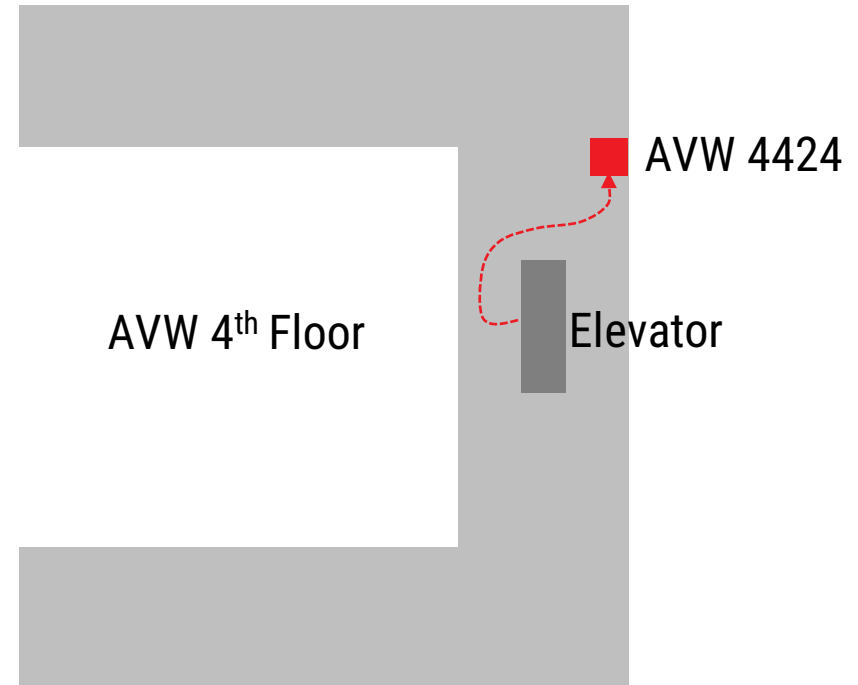
Office Hours

In AVW 4424

With the TAs:
Monday 4-6PM
Wednesday 4-6PM

With Nitin:
By Appointment

With Prof. Yiannis:
By Appointment



Course Logistics

Class Timings: Tuesdays and Thursdays from 12:30PM-1:45PM in CSI 2107

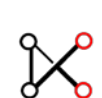
Class Website: Syllabus, slides and assignments

<https://cmssc828t.cs.umd.edu/>

Canvas/ELMS: Grades and Submission

Piazza: **Discussions** and help outside office hours

<https://piazza.com/umd/fall2017/cmssc828t>



Deliverables

Projects (60%)

- Project 1 (20%) – Partly individual, partly group
- Project 2 (20 %) – Individual
- Project 3 (20 %) – Partly individual, partly group

Homeworks (12%)

Exams (30%)

- 1 Final Exam of 18%

Quizzes (10%)

Different kinds of work!

- Written Assignments
- Programming Assignments
- Laboratory Assignments

Laboratory time

- Will be in the evenings and weekends
- Will be in Engineering Annex Building Room 200
- Very little flexibility



Group Work Policy

You are welcome to work in groups for this class

Use **Piazza** as much as possible

Everyone must turn in individual assignments

Everyone's work must be their own, **no copying**

Write a list all of your collaborators at the top of your HW and project submissions
(including in your code)



Code of Academic Integrity

We take academic integrity very seriously in CMSC 828T

UMD Code of Academic Integrity is available online:

- <https://tltc.umd.edu/plagiarism-and-honor-code>
- Please read this carefully

When in doubt, ask us before you act!

NEVER EVER have code in your submission that is not yours !

In the worst case, insert the code with comments of `%%%BEGIN` and `%%END` and cite your source (classmate, github page, etc)

MINIMUM penalty on code plagiarism is zeroing of entire project.



Course Outline Part 1



Course Outline Part 2



Course Outline Part 3

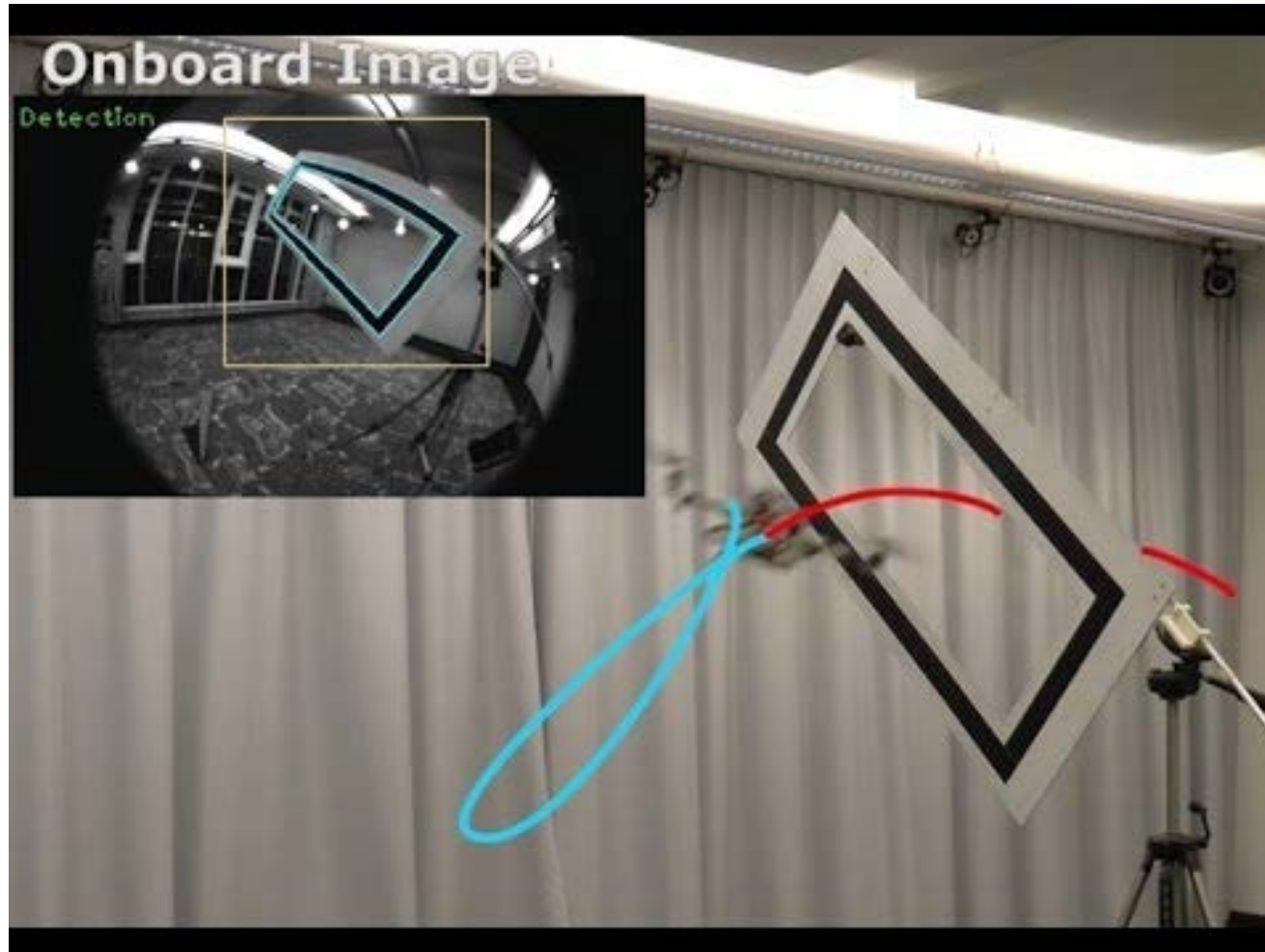


Image Credits:
University of Zurich

Prerequisites

Mathematics

- Graduate Standing in differential equations and numerical linear algebra

Mechanics

- Rigid Body transformations, rotation matrices
- Undergraduate physics

Algorithms

- Graph search, numerical simulation

Computation

- Fluency with MATLAB
- Basic Linux usage (Ubuntu)



Schedule

Look at the website:

<https://cmssc828t.cs.umd.edu/>

