

INSTRUCTIONS FOR PROJECT PROPOSAL¹

16822 GEOMETRY-BASED METHODS FOR COMPUTER VISION
(FALL 2021)

<https://piazza.com/cmu/fall2021/16822>

OUT: Sep. 17, 2021

DUE: Sep. 27, 2021 11:59 PM

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START HERE: Instructions

- **Collaboration policy:** Students should form a group of two to three for a project. Please use Piazza to find project partners. Once partners are identified, enter team details at <https://forms.gle/ERwJgXP89twiMuWx7>. Also see the Academic Integrity Section on the syllabus document for more information: <https://piazza.com/cmu/fall2021/16822/resources>
- **Project Topics:** Projects must utilize **camera geometry**. The students are free to explore the aspects of camera geometry in innovative ways. Feel free to have anything from completely theoretical to completely practical. Given below are examples of project proposals from previous iterations of the course:
 - Scene 2 Synth: Inserting synthetic objects into a dynamic scene using lightfield videos
 - Weighted Continuous Monocular Visual Odometry with DeepFlow
 - Shape reconstruction using Non-rigid SFM
 - Can anyone be anyone else? High-Fidelity Mesh Alignment via Iterative Closest Point Transformation
 - Features Attention and Anticipation with Stereo Vision
 - Automatic Fisheye Distortion Correction in the Wild
 - Unsupervised Learning of Monocular Depth Estimator from Videos
 - Light Field Stereo
 - Accurate Fisheye Calibration
 - Super resolution model reconstruction using Partial Shape Templates

¹Compiled on Friday 17th September, 2021 at 13:02

- **Project Proposal Guidelines:**

It is always a good idea to first think about the scope of a project, and the type of problems to be tackled. A good project is one that clearly describes the problem with an existing solution, and how the proposed solution could potentially be able to solve it. We suggest students to think about the following when formulating their project statement:

- What is the problem, or big-picture of the problem that you want to solve?
- What are the existing methods?
- What is the problem with existing methods? Do they work only under some particularly unreasonable assumptions **or** do they fail in a particular class of situations?
- How could we potentially overcome this problem?
- What are the good ways to demonstrate that there was a problem with the existing methods, and how the proposed solution overcome those problems?

- **Submitting your work:** Please follow the following instructions once you have figured out the above:

- Please use the provided project proposal template.
- Be precise in your proposal. The project proposal **should not** be more than one page. Think of it as an extended abstract for CVPR submission.
- Please submit the document over on Gradescope (<https://gradescope.com>)
- The proposals are due on Sep. 27, 2021 11:59 PM

- **Late Submission Policy::** See the late submission policy here: <https://piazza.com/cmu/fall2021/16822/resources>