This fall semester, COSGC is recruiting only students with very specific experience. Check back spring semester 2021 for more entry-level projects.

Mid-Fall 2020 Positions

1. The Gluon Spacecraft Study (5-6 positions)
**Gluon Spacecraft Study**

The Gluon Spacecraft Study will design a low-cost, modular (or multipurpose) space vehicle for launch and deployment of small payloads and/or expendable commodities in low Earth orbit (LEO). The Gluon spacecraft will be a simple, expendable ESPA-class spacecraft equipped with ADCS, EPS, communications, and a payload bay. To reduce mass and volume while meeting the strict recurring cost requirements, the design of Gluon will need to be highly innovative, for example considering the use of non-aerospace components. The Gluon Spacecraft Study will continue through mid to late January 2021 with the possibility of building actual hardware in the 2021/2022 time frame. The goal of this study is to design (not build) a spacecraft that meets the requirements. This project will be supported by an outside aerospace company located in Colorado. This company will meet with students on a weekly basis and provide mentors in all the key areas of the design. The project will culminate with a design review to the company in mid to late January 2021. More details on this project are forthcoming but until then, here is what can be said for these opportunities.

Image credit - [EmojiOne project](#)

**Current Position Openings** (Open to CU Boulder students):

- Project Manager / Systems Engineer (1)
- Attitude Determination and Control Engineer (1)
- Electrical Power System Engineer (1)
- Mechanical Engineer (1-2)
- Command and Data Handling, Software, and Communications Engineer (1)

[COSGC](http://spacegrant.colorado.edu/boulderstudents/howtogetinvolved) Updated 10/05/2020
<table>
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<tr>
<th><strong>Job Title:</strong> Project Manager/Systems Engineer</th>
<th><strong>Position #:</strong> GSS 01</th>
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<td><strong>Project:</strong> Gluon Spacecraft Study</td>
<td><strong>Available Positions:</strong> 1</td>
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**Description:** This position will be responsible for running the Gluon Spacecraft Study with input from COSGC staff and Gluon company mentors. This position will also complete the requirements flow down process for the spacecraft along with the CONOPS and overall project system architecture. This architecture should focus on a low cost design both financially and in spacecraft weight. The goal of this position is to lead the team to a successful and complete design of the Gluon Spacecraft Study at the lowest practical cost by January 2021.

**Minimum Requirements**
- All engineering majors
- Junior or senior
- Previous hands-on project/team experience
- Previous experience running a project and developing requirements
- Interest in space

**Desired Skills**
- Past spacecraft design experience
- Experience developing CONOPS
- Experience developing functional block diagrams
- Excellent communication skills

**Time Commitment:** 10 hours/week

**Type of Position:** Biweekly/hourly paid: $15/hour
<table>
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<tr>
<th><strong>Job Title:</strong></th>
<th>Attitude Determination and Control Engineer</th>
<th><strong>Position #:</strong></th>
<th>GSS 02</th>
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<td><strong>Project:</strong></td>
<td>Gluon Spacecraft Study</td>
<td><strong>Available Positions:</strong></td>
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**Description:** This position will be responsible for developing the approach and design for the ADCS system for the Gluon Spacecraft Study. Basic control law design and hardware selection will be involved. The goal of this position is to complete the low cost design of the ADCS system by January 2021.

**Minimum Requirements**
- Aerospace Engineering majors
- Junior, senior, or graduate student
- Previous hands-on project/team experience
- Previous coursework and/or experience with ADCS
- Interest in space

**Desired Skills**
- Past spacecraft design experience
- Experience with ADCS hardware and control law

**Time Commitment:** 10 hours/week

**Type of Position:** Biweekly/hourly paid: $15-$20/hour
<table>
<thead>
<tr>
<th><strong>Job Title:</strong> Electrical Power System Engineer</th>
<th><strong>Position #:</strong> GSS 03</th>
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<tbody>
<tr>
<td><strong>Project:</strong> Gluon Spacecraft Study</td>
<td><strong>Available Positions: 1</strong></td>
</tr>
</tbody>
</table>

**Description:** This position will develop the electrical power system design for the Gluon Spacecraft Study. Basic hardware selection and power budgets will be developed. The goal of this position is to complete the low cost design of the EPS system by January 2021.

**Minimum Requirements**
- Electrical Engineering majors
- Junior or senior
- Previous hands-on project/team experience
- Previous coursework and/or experience with EPS
- Interest in space

**Desired Skills**
- Past spacecraft design experience
- Familiarity with EPS hardware (batteries, power management, and solar cells)

**Time Commitment:** 10 hours/week

**Type of Position:** Biweekly/hourly paid: $15/hour
<table>
<thead>
<tr>
<th>Job Title:</th>
<th>Mechanical Engineer</th>
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<tbody>
<tr>
<td>Position #:</td>
<td>GSS 04</td>
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<tr>
<td>Project:</td>
<td>Gluon Spacecraft Study</td>
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<tr>
<td>Available Positions:</td>
<td>1-2</td>
</tr>
</tbody>
</table>

**Description:** The position is responsible for designing and analyzing the spacecraft structure of the Gluon Spacecraft Study to ensure all project requirements are met. This will include the interface to the launch vehicle and mechanism design. This position will need to do some top-level thermal modeling for this spacecraft in the expected orbit. Design of thermal control and heating and cooling of bulk fluids will be needed. The goal of this position is to complete the low cost design of the spacecraft mechanical system by January 2021.

**Minimum Requirements**
- Mechanical or Aerospace Engineering majors
- Junior or senior
- Previous hands-on project/team experience
- Previous coursework and/or experience with designing mechanical systems
- Experience with Solidworks
- Interest in space

**Desired Skills**
- Past spacecraft design experience
- Past experience with Thermal Desktop or other thermal modeling software
- Machine shop experience

**Time Commitment:** 10 hours/week

**Type of Position:** Biweekly/hourly paid: $15/hour
<table>
<thead>
<tr>
<th><strong>Job Title:</strong></th>
<th>Command and Data Handling, Software, and Communications Engineer</th>
<th><strong>Position #:</strong></th>
<th>GSS 05</th>
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<tr>
<td><strong>Project:</strong></td>
<td>Gluon Spacecraft Study</td>
<td><strong>Available Positions:</strong></td>
<td>1</td>
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</table>

**Description:** The position is responsible for developing the electrical, software and communication design and interfaces needed for the Gluon Spacecraft Study. This may include board design but will largely focus on overall design of the C&DH system and software architecture. Some component selection and trade studies will be made. Some basic antenna design along with a top-level link budget will also be needed. The goal of this position is to complete the low cost design of these systems by January 2021.

**Minimum Requirements**
- All engineering majors
- Junior or senior
- Previous hands-on project/team experience
- Previous coursework and/or experience with designing C&DH and Software systems
- Previous coursework and/or experience with designing communication systems
- Programming experience
- Interest in space

**Desired Skills**
- Past spacecraft design experience
- Altium experience
- Multiple programming language experience
- Familiarity with link budgets
- Experience with comm systems and/or antenna design

**Time Commitment:** 10 hours/week

**Type of Position:** Biweekly/hourly paid: $15/hour
That concludes the Mid-Fall 2020 postings. Please keep an eye out for updates as the semester progresses.