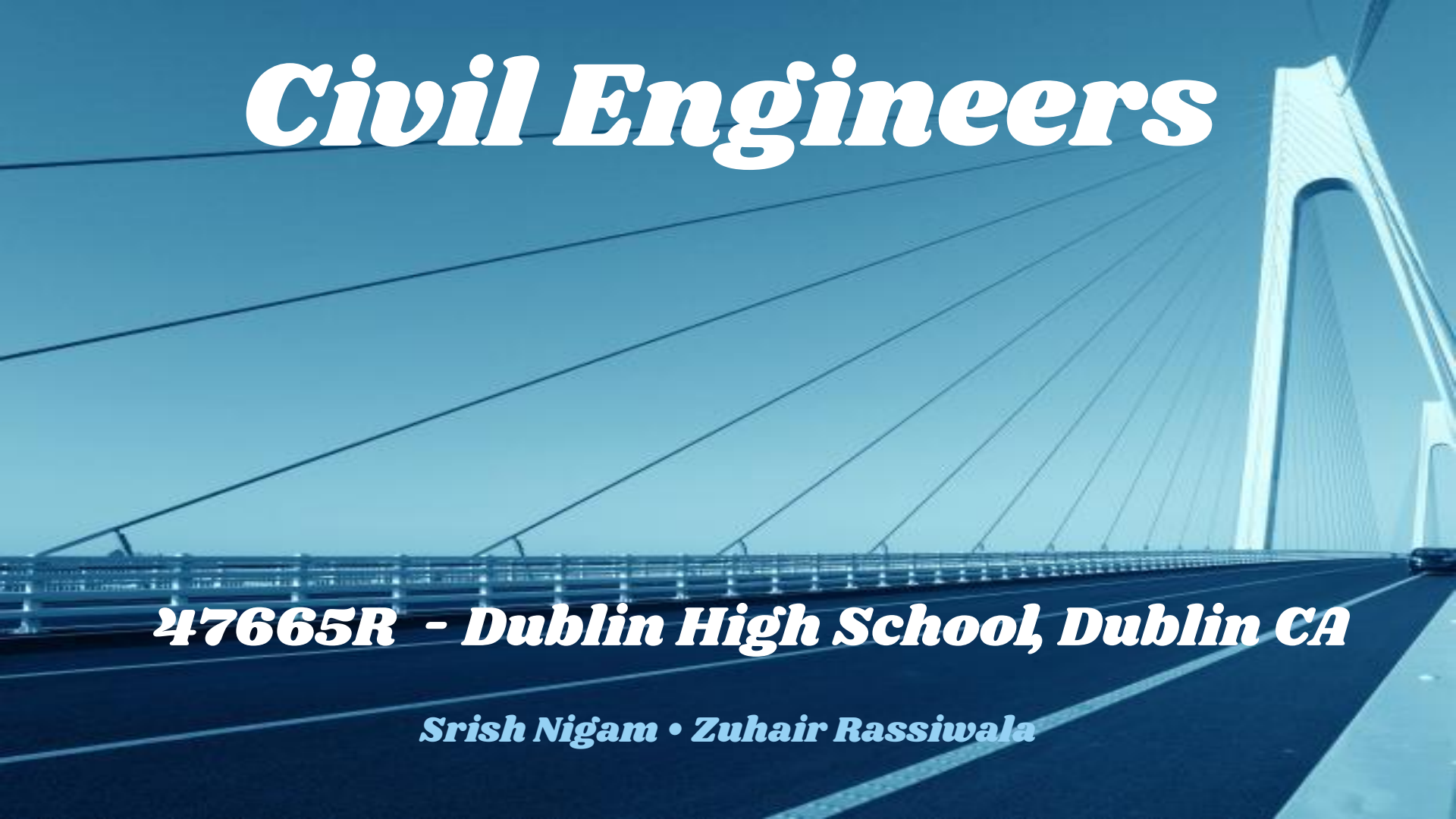
Civil Engineers



47665R - Dublin High School, Dublin CA

Srish Nigam • Zuhair Rassiwala

Why this career?

We chose the use of LiDAR by civil engineers because of its close proximity to drones, and its future capabilities as the technology gets better. People with this job use LiDAR and drones to be able to get a better understanding of their area to aid them in creating infrastructure. Many of our team members have a heavy interest in engineering, especially civil and computer science, and are passionate about the development of LiDAR technology, as well as drones. Working with LiDAR is often a team process, which is an aspect of the profession that our team finds the most exciting.

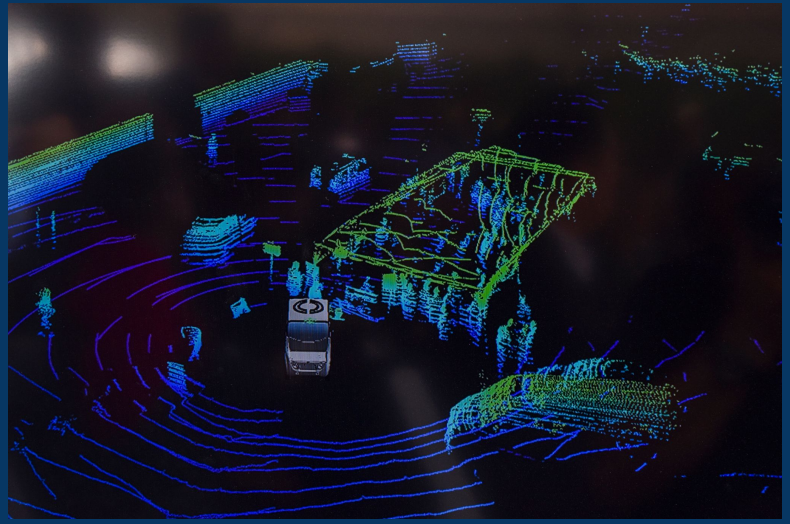


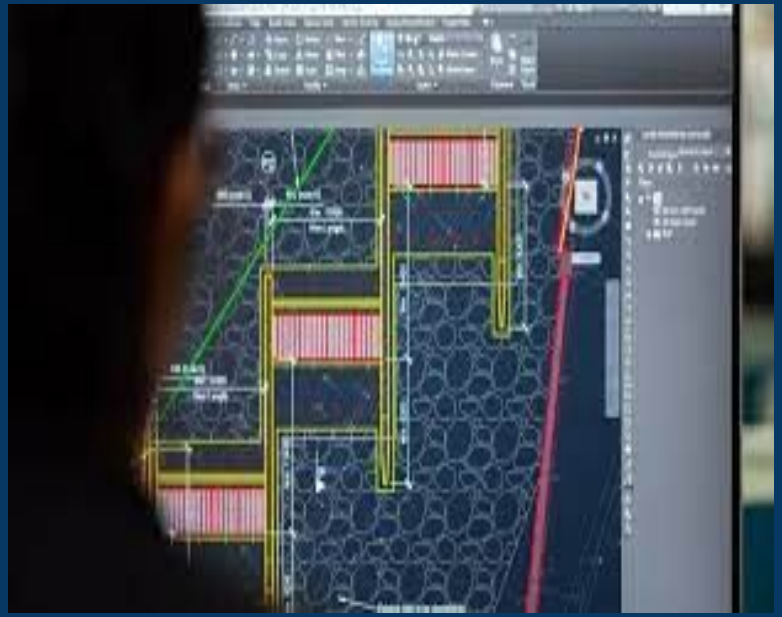
Image of a LiDAR Scan

Essential Skills

Civil engineers, especially those focussed on LiDAR technology, encompass many essential skills such as deep math and physics knowledge, the ability to devise innovative solutions to intricate problems, and an in depth understanding of LiDAR related topics. While technical skills are important, civil engineers must also have soft skills such as effective collaboration, project management, and the adeptness to navigate difficult scenarios through the scientific method. These skills are key because civil engineers often work in teams and it is important to utilize everyone's strengths and collaborate to develop the best possible project, ultimately contributing to the advancement of technology in the field.

Quick Facts

- Average Pay: $128,000
- Demand: Growing as technology improves
- Required Education: Minimum bachelor's degree in engineering/architecture.
- Employers: Private companies, universities, cities, government agencies.
- Combine civil engineering practices with LiDAR and drone usage.



Important Career Figures

Daniel Zivkovich is most notable for founding AirWorks, a company focussed on specializing in drone data collection and analysis particularly for construction. He is known for his pioneering work in the intersection of drones in civil engineering and construction projects.

Ella Atkins is a professor at the University of Michigan and has expertise in both civil engineering and aerospace engineering. Throughout her career, she has conducted valuable research on using drones for applications in environmental monitoring, disaster response, and more.

Memorable Projects

Notable projects involving LiDAR include using it for ariel inspections. This involves using LiDAR to help map out parts of cities and areas to make it easier for civil engineers and city officials to pinpoint areas of concern, as well as places that are lacking key infrastructure.

Another project is using drones to help create advanced maps of plots of agricultural land using LiDAR. These help farmers and civil engineers figure out exactly which area to add water infrastructure, as well improve the overall efficiency of the crop growing process.

Career Readiness

The Aerial Drone Competition allows members of our team to thrive in a collaborative environment. Most future careers demand strong teamwork and collaboration skills, which is what we have been developing as we all work on the drone. Additionally, a team environment allows us to develop leadership skills. The more experienced members of our team acts as leaders and mentors as they teach new members how the team works and how to get started with the tasked they are assigned. Leadership is crucial for future careers as it is important to take leadership responsibility when the opportunity is available. Furthermore, the Aerial Drone Competition has improved our navigation of the engineering process. We make sure to first have a clear goal in mind, develop what we need in order to achieve the goal, test what has been developed, and finally modify the development. Having a set routine like this is crucial for future careers as long term projects will need to be broken into smaller tasks with each task having its own process. In short, the Aerial Drone Competition prepares our collaboration, leadership, and design process skills, which are all extremely valuable for future careers.

Bibliography

"Civil Engineers : Occupational Outlook Handbook." *U.S. Bureau of Labor Statistics*, U.S. Bureau of Labor Statistics, 6 Sept. 2023, www.bls.gov/ooh/architecture-and-engineering/civil-engineers.htm.

Essential Civil Engineer Skills (with Tips for Improvement), www.indeed.com/career-advice/resumes-cover-letters/civil-engineer-skills.

"Notable Civil Engineers." *ASCE American Society of Civil Engineers*, www.asce.org/about-civil-engineering/history-and-heritage/notable-civil-engineers.

US Department of Commerce, National Oceanic and Atmospheric Administration. "What Is Lidar." *NOAA's National Ocean Service*, 1 Oct. 2012, https://oceanservice.noaa.gov/facts/lidar.html#:~:text=Lidar%20%E2%80%94%20Light%20Detection%20and%20Ranging,Lighthouse%2C%20Dry%20Tortugas%2C%20Florida

"7 Interesting Lidar Applications." *CloudFactory Blog*, CloudFactory, 23 June 2023, https://blog.cloudfactory.com/interesting-lidar-applications

Data, My NASA. "Technology: Lidar Remote Sensing." *NASA*, NASA, 9 July 2018, https://mynasadata.larc.nasa.gov/stem-career-connections/technology-lidar-remote-sensing#:~:text=Education,civil%20engineering%2C%20or%20related%20fields.