

# PCMT: Using Drones and Software in the Construction Industry

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In its second edition, the FYP accelerator program has helped final year students transform their FYP ideas into viable businesses. Among the teams are four civil engineering students who worked on solving the issue of delayed projects and resource mismanagement in the construction industry.

According to Reuters, the global market value of the construction industry is expected to rise from \$10.6 trillion in 2017 up to \$12.7 trillion in 2022. Despite being one of the highest valued markets globally, many companies in this industry fail to meet their project deadlines due to resource mismanagement and inaccurate scheduling. This is where the team stepped in to provide construction companies with a practical solution that helps them allocate their resources efficiently and mitigate the risk of having delayed projects. Saad-Chris Cheiban, John Karam, Marie Naccache and Joey Nseir are a group of Civil Engineering students who participated in the FYP Accelerator Program at AUB and founded a startup called PCMT to tackle this issue. According to Saad, “the startup provides construction companies with an application that is capable of determining the number of days a project is expected to be

delayed. The application then determines the number of workers that should be working on each activity in the project in order to avoid such delays.” This application is connected to several location chips mounted on the hats of the construction site workers. These location chips monitor the number of workers working on each activity in the project. A project manager then logs into the application and provides information about the project such as the deadline, the estimated productivity of the workers and the working conditions. Given this information, an algorithm then provides the project manager with the number of workers needed on each activity in order to meet the project’s deadline. This optimal distribution of workers is compared with the current worker distribution to calculate the number of days the project is expected to be delayed.

The team decided to take their project a step further and increase the accuracy of their application’s estimates. John mentioned that “since our application takes as an input the productivity of workers which may differ from one project to another, we decided to use drones to calculate the productivity for our client’s specific project.”



## THE FYP ACCELERATOR PROGRAM HAS HELPED FINAL YEAR STUDENTS TRANSFORM THEIR FYP IDEAS INTO VIABLE BUSINESSES.

Through providing visual data and monitoring the change in the shape of the construction site, drones calculate work progress in a given amount of time and deduce the productivity of workers specific to this project. Having a better accuracy of the worker productivity results in an increase in the overall accuracy in the application’s estimates. Saad added that, “a study we conducted showed us that the information provided by our application allows construction companies to improve scheduling

by 17% and decrease costs by 2%. In an industry where every day of delay is very costly, the savings we provide are very valuable.”

While reflecting on the whole experience, the team mentioned that, “we are really proud of what we accomplished. Around 60% of construction companies worldwide need tools that can help them manage their projects better and we successfully provided that.” The team also added that they still have big plans for their startup and their project. “We

are currently working on a functionality that allows the application to redistribute workers among the activities. For example, if activity 1 is expected to be delayed while activity 2 will be complete ahead of time, the application will be capable of suggesting to move ‘x’ workers from activity 2 to activity 1.” ■