Tulane duo working to make 3-D printing more efficient

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Competition was stiff, but in the end, Tulane University associate professor of computer science Ramgopal Mettu and 2015 Tulane graduate Samuel Lensgraf came up winners.


“This is the premier conference on robotics and automation,” said Mettu. “It’s also special that one of our undergraduates not only got a paper into a top robotics conference, but also got a best paper award.”

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Judges based their selection on such factors as originality, depth, quality, presentation and
significance as related to automation.

So what exactly is their paper about?

As Mettu explained, in traditional 3-D printing, a 3-D digital model is produced by what is
essentially an inkjet printer. The printer “extrudes” filament in 2-D slices, building the model
bottom up until it is complete.

“The problem with this approach is that in each layer, there may be a significant amount of wasted
motion because the printer head must create complicated geometric shapes,” said Mettu. “We
designed an efficient algorithm to plan the motion of the printer head that significantly reduces the
amount of wasted motion.”

Mettu and Lensgraf, who is now a software developer for a Tennessee startup, believe it can be
used to significantly speed up fabrication. They have obtained a provisional patent on their work
through the Tulane Office of Technology Transfer and are also exploring commercialization
opportunities.

Lensgraf, who did most of the work on the paper as an undergraduate, said he has been
overwhelmed by the recognition. “I am excited for the day that I get to see this theory out in the
real world, making manufacturing more efficient,” he said.