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The InVenture Prize: An undergraduate invention competition to encourage entrepreneurship and commercialization of student technology ventures

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Effecting an undergraduate student culture that encourages entrepreneurship and inventorship is a worthy goal, with metrics of success ranging from the gratification of self employment to the economic impact of small business creation. At Georgia Tech, we have started an undergraduate competition called The InVenture Prize to provide incentives, resources, and a structure for student innovation in a fun, high-profile event.

In our first year (2008-09), over 200 undergraduates expressed intent to compete in the competition. At the climax (March 2009), 8 finalists faced a panel of judges on stage before an audience of 200. The event was recognized by a front-page article in The Atlanta Journal-Constitution, by the state legislature (Representative Bob Smith), and by Georgia Tech interim president Gary Shuster in opening remarks at the competition. The winners received \$15,000, patent applications (\$40,000 value), and additional commercialization assistance, making this the largest undergraduate prize on campus.

Impact assessment has been largely qualitative to date, but 8 provisional patents have been filed as a direct result, and we have anecdotal evidence that the competition has motivated students to consider entrepreneurial careers and has culled and celebrated the best undergraduate inventors at Georgia Tech.

Introduction

Encouraging a university engineering student culture of entrepreneurship and inventorship can have impacts locally and beyond. Undergraduate students who pursue their own ideas through entrepreneurship are more likely to find satisfaction in their careers as well as impacting job creation externally. The Georgia Institute of Technology has one of the largest university career fairs in the country, with over 300 companies vying to hire bright engineering graduates. However, there are limited resources, structure and incentives for these students to instead pursue their own ideas. Indeed, a 2007 Baccalaureate Alumni Survey at Georgia Tech showed that about half of respondents think entrepreneurship skills are important, but only 35% think they were prepared (and many fewer think they were well prepared) [1].

Created and organized by faculty, the objective of The InVenture Prize competition is to create incentives, resources, and a structure for undergraduate student innovation and entrepreneurship in a fun, high-profile event. We seek to foster and nurture a sustained, entrepreneurial culture at Georgia Tech with an innovative bottom-up approach. This competition will help promote Georgia Tech's mission of "providing the state of Georgia with ... innovation ... it needs to shape a prosperous and sustainable future and quality of life for its citizens [2]."

There are several such invention competitions at other academic and non-profit institutions. At the University of Wisconsin at Madison, an "Innovation Days" competition is based on undergraduate students presenting inventions to a judge panel for cash prizes. This 15-year-old competition offers cash prizes up to \$10,000 and is open to undergraduates [3]. The National Inventors Hall of Fame Foundation hosts an annual Collegiate Inventors Competition sponsored by the Abbot Fund and the United States Patent and Trademark office. This competition is open to students and their faculty advisors, has a large cash prize of \$25,000, and has many university participants [4]. In addition, there are numerous resources on the internet that serve as student guides to patents, intellectual property protection, inventor resources, and services [e.g., 5, 6]. This competition is distinct from the many university business plan competitions such as at MIT and elsewhere [e.g., 7, 8] which focus on business planning, models for profitability, and investment as the primary metrics for success. While marketability, market size, and probability for business success are judging criteria for The InVenture Prize, the invention's innovation, or novelty, and inventor's passion are also critical. Thus entrants in The InVenture Prize present a specific

invention more so than a business model. Such a competition structure may limit the success of this program to large technical universities in its present form.

The InVenture Prize competition at Georgia Tech seeks to change the lives of our best inventors as well as effecting a culture change towards entrepreneurship and inventorship on campus. To our knowledge, our competition is unique in providing a large auditorium, on-stage presentation of inventions and real-time judging to inspire the audience, a partnership with a public broadcasting television network for state-wide outreach, and patent legal services for the winners. Also, the size and proportion of our engineering student body (~8,500 engineering undergraduates, 65% of total) affords the opportunity for a pervasive engineering culture and high participation percentage from the student body (currently at 1.5% with 200/13000)

The InVenture Prize Competition

In the first year of the competition (2008-9), over 200 undergraduates formally expressed intent to compete in the competition. At the climax (March 2009), 8 finalists faced a panel of judges on stage before an audience of 250. They presented their ideas, prototypes, market research and vision for the business success under intense scrutiny. The event was recognized by a front-page article in The Atlanta Journal-Constitution (4/1/09), by the state legislature (Representative Bob Smith), and by Georgia Tech interim president Gary Shuster in opening remarks at the competition. These eight finalists' inventions were provisionally patented by Georgia Tech while the students retained full intellectual property ownership. The winners received \$15,000, two patent applications (\$40,000 value), and additional commercialization assistance, making this the largest undergraduate prize in the Institute's history. The climax is shown in Figure 1.



Figure 1. Winners of the inaugural InVenture Prize competition at Georgia Tech (March 2009) with over 200 entrants. (Left) individual winner Roger Pincombe with DialPrice. (Right) Team winner Joseph Abrahamson, William Boyd, Sanjay Challa, Kento Masuyama, and Andrew Punnoose with the Chlorocyte Bioreactor.

Amongst the 200 entrants there we approximately 70 inventions divided evenly between teams and individuals. These competitors were educated and mentored throughout months of rigorous preparation by consultation with faculty mentors as well as a series of seminars for "InVenture Prize School" covering many aspects of making a business successful, including functional prototyping, market

research, financing, patent protection, industrial design, and pitching their ideas. Inventions spanned a wide range, from biomedical to energy/sustainability to mobile software applications for cellular phones. Mentors included the faculty organizers as well as faculty with research interests aligned with the students' inventions.

To assist the inventors in prototyping, we have additionally opened a new 700 ft² "Invention Studio" (opened March 2009) to provide free resources for prototyping from hacksaws to a water-jet machine tool. Students were able to fabricate prototypes to compete in The InVenture Prize as well as other hands-on, design-build courses. This facility is funded by industrial sponsors of the Georgia Tech Mechanical Engineering department including Schlumberger, John Deere, and Shell Oil and is presently directed towards students from mechanical engineering with expanded outreach planned.

An interactive, multi-media website (<http://inventureprize.gatech.edu/>) tracks the number of inventors registered, allows inventors to edit profiles about themselves and their inventions, and provides a number of "how-to" guides for topics such as patent searching and keeping a laboratory notebook. In addition, the website hosts a variety of videos for download from "InVenture Prize School."

The competition was one of the most widely advertised events on campus during the year. Advertising included emails to all students, website presence on the university home page and popular student web portals which receive 10,000+ hits/day, student newspaper ads, large banners and signs, and classroom pitches.

Future plans for The InVenture Prize competition include a variety of efforts to expand the reach of the InVenture Prize to the entire state of Georgia and nationwide. Through Georgia Public Broadcasting, the 3rd largest PBS network in the United States with a 10 million person audience, we have secured funding and commitment for the production and broadcast of a television series with a live finale broadcast statewide in 2009-10. Students are being filmed for this broadcast as they design their inventions, ask questions of their mentors, and struggle to make a working prototype. We are working with a former producer of CNN Headline News, Jason Evans, to produce this program, schedule a widely-recognizable host for the event, and innovate in areas such as text-messaging voting from a state-wide audience for their favorite inventions.

We also plan for Georgia Tech to host a national InVenture Prize competition, with the inventors coming from winning competitions at technological universities around the country. To this effect, we have had preliminary discussions with The University of Akron and Worcester Polytechnic Institute and are eagerly looking for new academic partners to create local competitions at large technical universities and funding partners.

We have additionally been working with Georgia State Representative Bob Smith (R-Watkinsville) regarding expanding the program to minority and rural communities starting with high schools in Oconee County, GA. In discussions with the Oconee County Chamber of Commerce (J.R. Whitfield, President) and the Associate Headmaster of Athens Academy in the county (J.P. Watson), we have proposed to catalyze and nurture InVenture Prize competitions at high schools in the county with travel to Georgia Tech for the high school winners in 2010 for recognition on stage in front of the live and television audience.

We are working towards outreach with Atlanta area high schools with large minority populations to excite them about attending Georgia Tech and pursuing careers in science and engineering. We plan to visit five local high schools in February 2010: Westlake (Fulton County) which is 98% African American, Wheeler (Cobb County), Rockdale Magnet (Rockdale County), Tech High School (Atlanta Public Schools) which is a math/science charter with 95% minority, and Arabia Mountain High School (DeKalb County) which is virtually all African American students with a new environment/engineering magnet component). At each school, we propose to give a presentation on careers in invention and entrepreneurship. These visits will be arranged in partnership with the Georgia Tech Center for Education Integrating Science, Math and Computing (CEISMC). To test this strategy, we visited College Park Elementary School (near 100% minority) on 4/24/2009 for a 2 hour science and engineering presentation with design/build projects on electricity through an associate in the Teach for America program. While the students shocked themselves with D-cell batteries, they also had fun learning about how to build stuff. At the end of these school presentations, we plan to invite the students from these schools to an afternoon and evening adventure at Georgia Tech for a campus tour, dinner, and to be special guests at the InVenture Prize finale on March 18, 2010. The total number of local, minority high school students expected to be impacted by this program is at least 200.

There have been some lessons learned by the organizers in the past year as well. We have increased the scope and outreach of The InVenture Prize School because feedback from the entrants conveyed that they felt underprepared and overwhelmed by the direct path to the competition. With weekly "How To" talks and "Coaching Sessions" with mentors, students are led through the process of successful registration and competition. We are also taking a more active role in facilitating student teaming, vetting student ideas before registration, and providing resources for prototyping, such as \$500 prototype fabrication grants (10 awards total) and access to the facilities of the "Invention Studio."

An additional challenge for the InVenture Prize in the next five years will be ensuring perpetuity through the fundraising, staffing, and housing of the staff. We have secured funding for the next 2 years (2010-2011) through a variety of local businesses, and Georgia Tech departments including D'San Corporation, DLA Piper law firm, and the Office of the Provost at Georgia Tech, among others. Additional fundraising efforts are underway with alumni and industry to raise approximately \$300,000 over 3 years (for years 2012-2015). Underwriting efforts for the Georgia Public Broadcasting television effort for an additional \$160,000 are also underway.

Metrics of success for The InVenture Prize include tracking the number of patent disclosures, provisional patents filed, and utility applications filed, as well as the number of businesses registered in the state of Georgia resulting from these programs. We also plan to track the number of incoming Georgia Tech students who chose the school in part because of awareness of these inventive programs and the number of students choosing science and engineering careers because of InVenture Prize, particularly from high school students from underrepresented communities that attend the event. After only one year of effort (Aug 2008-July 2009), we have anecdotal evidence that this model of engineering education and inspiration in a fun, hands-on, entrepreneurial, high-profile event format is having a transformative effect on the Georgia Tech campus and beyond. The impact has been assessed in the short term by the number of provisional patents filed (8) and campus-wide excitement about the competition as reflected in numerous campus newspaper and magazine features. We are working towards more quantitative metrics of assessing its impact.

Conclusion

The InVenture Prize has been a resounding success in the first year. The second year competition is underway and will climax in March 2010 with a live, state-wide television broadcast to millions of viewers on Georgia Public Broadcasting. After only one year of effort (Aug 2008-July 2009), we are convinced that this model of engineering education and inspiration in a fun, hands-on, entrepreneurial, high-profile event format is having a transformative effect on the Georgia Tech campus and beyond.

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