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Profile Interview With Vincent Duffy

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PROFILE INTERVIEW WITH VINCENT DUFFY

Apoorva Sulakhe, *College of Engineering*

FACULTY BIO SKETCH

Dr. Vincent Duffy is an associate professor in the Department of Industrial Engineering at Purdue University holding a joint appointment with Agricultural and Biological Engineering. Duffy focuses on human factors engineering and ergonomic design. His interest in teaching began early when he was a teaching assistant for IE 386 at Purdue University while pursuing his master's degree. As an industrial engineering master's non-thesis student, Duffy realized he had a natural inclination toward teaching. This motivation, along with the support and mentorship of Ferdinand Leimkuhler, the head of the department, turned him toward the field of research. He rejoined Purdue as a professor and has been teaching courses related to work design and analysis for 60 semesters.

Duffy attributes his success in research to his advisor, Dr. Gavriel Salvendy, a renowned professor in the field of human factors and ergonomics. Salvendy helped Duffy venture into multidisciplinary research areas, which was uncommon then. Duffy has a rich background in the field of human factors. He taught for six years at the Hong Kong University of Science and Technology, as well as teaching for three and a half years at Mississippi State University and worked as a visiting scholar at the University of Wisconsin–Madison.

SERVICE-LEARNING COURSES

Having been a student at Purdue, Duffy could relate to the courses he was teaching and aimed for continuous improvement. He asked for feedback from the Dean's Office and the Purdue Center for Instructional

Excellence (CIE) in order to develop a more systematic approach toward the courses he was teaching. Duffy also worked with Purdue's IMPACT program (Instruction Matters: Purdue Academic Course Transformation) on course update and transformation for IE486 Work Analysis and Design II. This program aimed to achieve a student-centered learning environment by incorporating active and collaborative learning as well as other student-centered teaching practices and technologies in large enrollment foundational courses. He also worked with the National Science Foundation's Partnership for Innovation: Building Innovation Capacity (PFI: BIC), which emphasized innovation and active learning in applied research. Duffy received the Most Innovative Project Award from the Hong Kong Institute of Engineers. He also visited Poland for a workshop on the topic of innovation and later collaborated with higher industry-level partners. These partnerships and initiatives ultimately led to the development of a service-learning pedagogy along with a focus on active learning.

Duffy currently teaches one to two courses each semester related to service-learning. Each course has a capacity of about 120 students resulting in 20–25 projects per semester, many of which are service-learning-based. Bibliometric analysis, meta-analysis, analytical hierarchical process, cluster analysis, web design, wireframe design, and eye-tracking are examples of the various labs, which help the students develop technically robust prototypes for their projects. Duffy also applies other service-learning objectives to his courses, apart from these projects, including a social robot whose voice recognition and facial expression recognition pattern help students study the human factors perspective

of automation. His courses focus on increasing student engagement, competence, and learning. Focused course redesign using research-based pedagogies helps students reflect, assess, and share results that benefit future courses, students, and institutional culture.

COMMUNITY PARTNERS

When Duffy returned to Purdue as a faculty member, he volunteered for the INSPIRE program, a research institute in the School of Engineering Education at Purdue University that studies engineering thinking and learning to engage all pre-college learners and impact educational systems. Later, as a Fulbright Scholar, he was exposed to ideologies like service-learning and engagement.

He worked with the INSPIRE program to develop a computer chess and engineering systems program, which helped students at Happy Hollow, West Lafayette Junior, and Cumberland Elementary get interested in chess. The interface of the chess bot and database of games were popular with the students. This resulted in the Cumberland Elementary winning the state championship a few years later. Another resource included a game recording device called Mon-roi. This device recorded the game to prevent cheating. It helped the younger students articulate their thoughts and actions to the tournament directors. The Mon-roi system saved time and money in learning and enabled parents to see their children play in the tournament.

Duffy realized that such databases and successful prototypes could be brought back to the IE 486 class to use as good examples for developing better projects. Due to a lack of resources and scheduling issues, this has not yet been possible. However, Duffy plans to justify these projects through evaluation procedures, leading to improvements in performance, safety, and interface design.

Duffy believes that sustaining such service-learning initiatives requires impetus on various fronts. Funded staff liaisons between the community and Purdue students to engage continuous progress of initiatives is of key importance. Keeping connections updated and responding to the feedback from the community is essential in moving forward. He believes that various forms of support from the institution and external grants are required to sustain this community partnership. Motivated and involved university students are an important element to engagement activities. Duffy empowers students technically, but he also enables them to understand the importance of their presence in the community, such as their value in terms of diversity and social impact.

REFLECTION AND CONCLUSION

Since Duffy was fortunate to have good mentors, advisors, and support throughout his entire academic journey, he understands the importance of guiding and motivating his students. His advisees and students are encouraged to participate in service-learning initiatives, including participation in workshops and poster sessions. He is pleased with the increase in his service-learning initiatives this year and is grateful to his colleagues Dr. Lindsey Payne and Dr. Patricia Darbishire, who introduced Duffy to a group of faculty engaged in service-learning. He noted that these initiatives increase the value of the educational experience for students but also benefit the community. He acknowledged the impact of programs like the Engagement and Service-Learning Summit that brought together students, faculty, and community members on one common ground to interact and benefit from each other. The ideology of “following your nudge” and the many ways to do so, demonstrated at the summit, is something he will come back to each year. According to Duffy, many other faculty members have courses that focus on applications compatible with service-learning. Bringing awareness of this possibility is important. Those who enjoy community outreach, be it students or faculty, can help increase momentum in the area of service-learning. Duffy also was happy to share with me that his Engagement Fellows Grant received approval on the same day as our interview. We congratulate Duffy on his efforts toward such service-learning activities and wish him all the best for his future endeavors in the field.

AUTHOR BIO SKETCH

Apoorva Sulakhe is a graduate student in the School of Industrial Engineering. She plans to graduate in spring 2017 with her master’s degree and intends to work for a diesel manufacturing company. Sulakhe has been a teaching assistant under Dr. Vincent Duffy for courses including Work Analysis and Design I and II (IE 486 and IE 386) for the past three semesters. During this tenure, she helped senior industrial engineering students procure projects involving analysis and design of human work systems. Her supervision led to the development of many user-centric applications.

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