COMS30400 Games Project

University of Bristol | Department of Computer Science

Established in 1996, *The Games Project* is a third year Computer Science unit. It aims to give students experience of working in a team to specify, design and implement a large-scale software system – a state-of-the-art computer game - mirroring the professional model of an independent games company. The topic choice is deliberate – CS students are passionate about both the creativity and technology underpinning games and this proves to be a highly effective motivator for learning. They experience collaborative team work, project development and, through practice-based learning, are exposed to real implementation of core CS themes, all in collaboration with industrial mentors. The project runs throughout the year and concludes with an annual event, known as Games Day, in which all games are demonstrated and played. The project has evolved significantly since its introduction and is now one of the most exciting and successful components of our degree programme.

The Games Project does not conform to a standard teaching model. The process starts with a Launch Day event - during which the development teams are formed by the students. Each team then creates their own formal contract; which they all sign. Team Managers and Lead Programmers are allocated within each team and they then start a rapid process of conceptual design to quickly establish their game narrative and platform. These concepts are then presented to and approved by a marking panel. At this approval point the development cycle begins and the teams adopt mentors from local media and technology companies. There are no formal lectures or timetables. Each team is expected to self-manage their own schedule, design and allocate their own tasks, design their own deliverables and deadlines, and to conduct their own user-testing and review points, as per professional practice. The process is challenging, but the experience is highly valued by all students and the end results are stunning. The enthusiasm for games programming, coupled with a natural inter-team competitiveness, creates a rich learning environment where the students want to self-learn the latest state-of-the-art technology and tools in order to develop the best possible games. Learning by osmosis, they experience a huge software engineering and management task on a scale that could not be replicated by a normal lecture programme with formal exam, summative or formative coursework assignments. Continual development is encouraged through the use of review

points throughout the academic year. These review sessions are conducted by members of a marking panel and by external industrial advisors. The unit mantra is integrate early and integrate often.

The interplay between professional application and theoretical concepts is core to our teaching methodology in the department. We are fortunate that our corporate sponsors donate each team with the time and expertise of a personal industrial mentor to support them during the year. These mentors guide them through the development and team management process. Each team meets independently and regularly throughout the year with their mentor – again by their own arrangement. Similarly the project is fortunate to be supported by the collaboration of the University's Music Department. This is now an annual inter-departmental collaboration within the University and this year 16 Composers on our Music MA programme will engage informally with our development teams to develop the scores and musical soundtracks to the games – music design being one of the few skills not catered for in-house by academic staff within the department. The resulting games often include the use of our in-house motion platform (a single-person simulator), networking our 100 workstation lab, developing for standard consoles and platforms such as Android or Xbox, using body-worn sensors as input devices, or experimenting with emerging technology directly from our own research labs. This year our 3D rapid-prototyping machine will be used to create components for a games concept where the users will interact virtually and physically with objects. The games concepts are always novel, non-standard, technically and academically challenging, and state-of-the-art. This is the essence of the games project design brief – which truly encompasses the Department's values and ethos.

Computer Science is a multi-disciplinary and multi-faceted subject. Our undergraduate programmes are structured such that early fundamental mathematical and foundation units are core and attended by all students. Advanced optional units are introduced into the system only in their third year of study – at the outset of this project. At this point in their degree we expect our students to mature academically and start to focus on their own path in Computer Science; either within a research theme or with a specific career path in mind. The base learning objectives for this unit are to experience a large-scale professional software engineering task, to experience collaborative development as part of a team and to develop key transferable skills in terms of management, organization and presentation. In this sense the project provides an enabling framework. Advanced Computer Science topics are introduced by and learnt by the students themselves; not dictated by academic staff. This is unique. The games design is driven

directly by the interests and skill-sets of the students within each development team. If they are specifically excited by scalable networking solutions, mobile platforms, social networking, animation production or bespoke hardware development then these personal interests drive the games concepts and design. In a sense the students design their own tailored learning experience, which is beyond standard practice. The project is best explained by the students themselves at http://www.youtube.com/watch?v=0iN96_XIj1E

Beyond the generous donation of time and support from our mentors and industrial collaborators this unit receives no specific external funding.

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