COULD COMPUTER GAME DESIGN BECOME A CORE SUBJECT FOR ENGINEERING?

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Abstract - UK departments offering engineering degrees are struggling to maintain recruitment levels at a time the British government is aiming to increase the number of school leavers entering further education to fifty percent. Although engineering academics sight a number of external factors which contribute to this situation, there appears to be reluctance in addressing the question that the problem may lie in the courses on offer. At Lancaster University we decided to tackle this question by devising courses that could provide students with the necessary skills for a career in engineering and at the same time making them as attractive as possible to prospective students. One such course perspective is that of “Computer Game Design”, which presents a wealth of opportunity for teaching what may be considered “core topics”, for future engineers. In this paper we offer ways of producing new courses that challenge more traditional approaches to teaching engineering.

INTRODUCTION

In 2002 the BBC launched a month long television debate to find the “100 Greatest Britain’s” of all time which culminated in a list in which over half were engineers and scientists, and indeed the runner-up was an engineer [1]. Despite this, UK departments offering engineering degrees are struggling to maintain recruitment levels at a time the British government is aiming to increase the number of school leavers entering further education to fifty percent [2]. Although engineering academics sight a number of factors which contribute to this situation such as: changes in school curriculum; the changing structure of the entry level qualification; and a perceived lack of status for engineers, there appears to be a reluctance in addressing the question that the problem may lie in the courses offered. As academics we need to ask ourselves, “have we become slaves to the traditional content of our courses and lost sight of one of the goals we aspire to for our students, that of “life long learning” and adapting to technological change?”

In the Department of Communication Systems at Lancaster University we decided to tackle this question by devising courses that could provide students with a skill base suitable for a career in the twenty first century, and at the same time making them attractive to prospective students.

In particular, we have utilized “Computer Game Design”, which normally produces an initial reaction of horror among engineering academics, although it presents a wealth of opportunity for teaching what may be considered “core topics” for future engineers. This idea is not as radical as it may appear; many engineers are familiar with Claude Shannon’s seminal work in the development of information theory but may be less aware of his 1950 paper on computer chess [3]. Game playing programs was one of the original research topics in Artificial Intelligence (AI) and it is worthwhile considering the remarks of one of the pioneers in this field, Arthur Samuel, when he came to the following conclusion in 1960 [4]:

“Programming computers to play games is but one stage of an understanding of the methods which must be employed for machine simulation of intellectual behaviour. As we progress in this understanding it seems reasonable to assume that these newer techniques will be applied to real-life situations with increasing frequency, and the effort devoted to games…will decrease. Perhaps we have not yet reached this turning point, and we may still have much to learn from the study of games.”

We believe this statement still holds true today and under the very broad envelope of computer game design we are able to study topics such as: software engineering; real-time systems; fuzzy logic; neural networks; wireless systems; to name but a few.

CONCLUSIONS

In this paper we present opportunities for teaching some of the subjects previously defined using computers games design as the underlying framework. Although these methods challenge more traditional approaches to teaching engineering they provide not only the academic requirements, but appeal to the so-called, ‘computer game generation’.

REFERENCES

[1] BBC “Great Britons homepage”

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