Letter of Intention for Doctorate Degree

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The most enchanting part of computer engineering is actualizing all imaginations and ideas. When it is combined with endless creativity and thinking, no one can imagine what will come out. Also, in contrast to other diciplines such as electronics or civil engineering, computer engineering has slight limits and almost no restrictions. Thinking that the only limit is the ideas, one can never think that working on this area is sufficient. When I consider my undergraduate and graduate studies, I can clearly specify that I gained the ability to search and learn things by myself and working individually as well as with teams. Also my studies gave me experience, basic and advanced knowledge about computer science and fundamentals of engineering. However, I think a deeper study is required to enlarge such a perspective for this area and become a qualified engineer and researcher.

Since I begun my graduate study in METU, I have been working as a software engineer. This experience gave me great opportunity to observe what is really going on in software industry and how academic researches can be combined with it. I tried to use novel and new academic methods from most of disciplines I took in industrial projects and this effort to combine academical and industrial life always keeps my attention live on researching. The actual reason why I want to keep on going to Doctorate is this inclination.

In my graduate thesis, I come up with a novel path planning algorithm in the light of the knowledge of my advisor, Faruk Polat. This algorithm can be used by mobile agents in *dynamic* and *unknown* virtual environments where agents goal is to traverse from an initial location to a target one. However, only finding the shortest path can not be applied to many real-life search problems. Thus, this could not be *the only constraint*, there may exist at least two or more constraint to optimize. For example, both finding the shortest and the safest path in a threat-based environment among threats could be a scenario to consider. The multi-objectivity covers more realistic problems with respect to single-objectivity. Thus, we focus on this problem and expand problem space in multi-objective perspective. The results and performance of algorithm is compared with a very common multi-objective path planner algorithm, MOA*, and great performance differences are observed especially in dynamic unknown environments. We sent a conference paper of this study to Intelligent Agent Technology (IAT 2012[1]) Conference and we are expecting an acceptance. The

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[1] http://www.fst.umac.mo/wic2012/IAT/

front page of sent paper is also attached to this letter. Currently, I am trying to finalize my thesis document and I will give my defense as soon as possible.

Since, research areas in computer science develop rapidly and there is much more work to do, I want to continue my graduate studies in doctorate and grow my experience and knowledge in order to research and solve more complicated real-life problems.