Barnabás Králik

EIT Digital Budapest DTC

PhD topic: Domain Specific Languages

PhD supervisor: Dr. Tamás Kozsik, ELTE

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'At the EIT Digital Doctoral School, I have learnt a lot about how to see what matters, how to find the resources that are necessary for solving the Really Important Problems and how to connect these two.'

Achievements & further plans

Barnabás is in the final phase of his PhD studies. He has been examining **new ways of describing computer software** and he has **applied his research to the field of Cyber-Physical Systems** and **specific IoT applications** – he has spent his geographical mobility in Trento at the STMicroelectronics Advanced Systems Technology Lab, where he has worked on the standardization of smart objects and software development tools, supporting the efforts of the host company. He is most interested in further exploring the contemporary and future industrial applications of DSL technology..

The programmer is a mediator and translator between customer and computer. It is thus of utmost importance to develop such tools and languages that let ideas be expressed in a notation that is well understood by all three of these parties.

Educational status at Spring semester of 2016:

RA	OR	BMD	GH	Mobility	BDExp.
✓	✓	✓	✓	✓	⚙

Reserach topic

Software re-development and porting take up significant resources of software development organizations in case of creating systems composed of heterogeneous devices. During most of his student years, Barnabás was working on designing a programming language for this domain which enables developers, computers and customers to understand each other effortlessly.

The design of the language has been focused on finding the balance between functional and imperative constructs – so that it is easy to express clear thoughts about the distinct parts of the system that is under development, to guide the developers in a way that unnecessary module interdependence is avoided, and yet to remove the unnecessary complexity of input-output that is typically encountered when working with purely functional languages.

Barnabás has talked about his work at various regional and international conferences and published results in related publications.
Currently, Barnabás is working on extracting the essence of his experiences in language development; he is working on a programming language for creating programming language tools.