DIADROM

Thesis proposals
draft

2013-11-22

Project ideas

1. **Function Filtered Fault tracing**
   - Research problem: Developing guided fault tracing is often very time consuming. Diadrom has developed a idea called function filtered fault tracing to minimize redundant work. In parallel, Open Diagnostics eXchange (emerging standard ISO 13209) for exchanging test sequence information is becoming increasingly important for test sequence creation and reuse.
   - Research question: How can the function filtered fault tracing be utilized using OTX?

2. **Flirt with Phone - Product health check through blink codes**
   - Research problem: It is rare that a capital product (e.g., garden chain saw) can show for its user if they is about to break down. However, many such products have software on-board that can indicate when a fault mode has occurred (e.g., with a red light LED).
   - Research question: Can the LED of a simple capital product be used to communicate enough information for a smartphone to conduct a health check?

3. **DiagStudio in cloud**
   - Research problem: Diadrom has a diagnostics system called DiagStudio that runs as a PC client written in C# .NET. Many of the customers wants the benefits of having DiagStudio as a cloud service. However, lots of native components needs to access the I/O ports of the local PC.
   - Research question: How could DiagStudio be re-designed to exploit the benefits of cloud computing?

4. **Automated eyes 'n ears**
   - Research problem: Automated testing has become increasingly popular in the industry. However, it is often tricky to automate tests where visual (outside the computer screen) or sonic inspection is needed to validate if the test executed successfully
   - Research question: How could an automated test framework be designed that allows visual or sonic inspections without human interaction?

5. **Customer fault logger**
   - Research problem: A smart phone is in almost every customers hand. It is often difficult for companies to record rich and in-context descriptions of products errors that the customers perceive.
   - Research question: How can a smartphone be used to guide customers to give a rich problem descriptions for perceived product problems?

6. **What is the user using**
   - Research problem: Only a limited set of features of a system constitutes for a majority of the usage time. It is important for product developers to learn the usage pattern in order to improve the system.
   - Research question: How can a logging component be integrated into a system that can report the usage patterns to the developing organization?

Typical set-up

- ○ Project supervisors
  - ○ Industrial supervisor: Henrik Fagrell, PhD , CEO Diadrom (60+ thesis student supervised since 1996)
  - ○ Examiner at university: TBD
  - ○ Empirical Partners: Volvo Group Telematics

- ○ Method
  - ○ Narrow the problem
  - ○ Investigate what the requirements of today (interview experts)
  - ○ Build prototyp
  - ○ Evalutate protype result
  - ○ Design implications for future system