Bachelor Projects

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Universiteit
Leiden
The Netherlands

Research at LIACS

Two clusters

- Algorithms and Software Technology
  - …
  - Theoretical Computer Science
  - Software Technology
  - …
- Computer Systems, Imagery & media
  - …
  - Imaging and Bioinformatics
  - …

Zooming in …

<u>Algorithms and Software Technology</u>
- Theoretical Computer Science
  - Rozenberg
  - Van Vliet
  - Hoogeboom (Algorithms)
  - Kleijn

- Software Technology
  - Arbab (CWI/LIACS)
  - De Boer (CWI/LIACS)
  - Bonsangue (LIACS/CWI)
  - Kleijn

<u>Computer Systems and Imagery & Media</u>
- Imaging and BioInformatics
  - Verbeek
  - …

Teaching – bachelor level

- Theory of Concurrency
- Studievaardigheden/FI (I&E)
- Bachelorclass
- FI 2,3
- Inleiding (Fundamentele) Informatica
- Analyse van Algoritmen
- Formele Talen
- Berekenbaarheid
- Logica
- …

Research Interests

CONCURRENCY

- Modelling

- Formal Methods

- Applications

Research Interests

- Models
  - Petri Nets
  - Team Automata
  - …

- Formal Methods
    - analysis
    - synthesis
  - Formal Languages
  - Transition Systems
  - (Extended) Partial Orders
  - Regions
  - …

Research Interests

- Applications

  - Biology
    - Modelling biological processes
    - Implementing/study bio features

  - Business: Financial Systems

Projects

Pimp pipe

Description
- Pipe: Tool for Theory of Concurrency
- Old
- Newer, more stable version
- Revise and extend existing custom made modules
- Investigate other tools/features

Prerequisites
- Theory of Concurrency
- Java

Supervisors:
- Jetty Kleijn
- Bas van Stein

Projects

Set Nets: Biologically Motivated

Description
- Bio systems do not 'count'
- Absence, Presence, Inhibitors, Promotors
- Boolean nets, greedy firing rule
- New Theory needed …

Prerequisites
- Theory of Concurrency

Supervisors:
- Jetty Kleijn
- (Bas van Stein)

Projects

Structured Occurrence Nets

Description
- Structure of systems may change over time
  - dynamic reconfiguration
- Component systems are subject to modification by others
  - breakdown, replacement, software updates, biological processes
- Occurrence nets: causality
- Structured occurrence nets: relate individual occurrence nets
  - at possibly different levels of abstraction
- Study SONs, aim extension causality combined with time
- Algorithms (analysis)

Prerequisites
- Concurrency interest

Supervisors:
- Jetty Kleijn
- Hendrik Jan Hoogeboom

Projects

Develop a prototype editor for a Visual Modelling Language

Description
- Domain Specific Language for financial markets
- Business-to-Business communication
- Develop a prototype Editor
- Eclipse and/or Eugenia

Prerequisites
- I&E student
- (Willingness to learn) Eclipse and/or Eugenia

Supervisors:
- Jetty Kleijn
- Pieter Kwantes (ICT in Business; PhD)

Projects

Biomodelling using Petri Nets

Various projects
- Modelling
    Infection, Embryonic development, Gen expression, Pathways
- Tools, Software

Prerequisites
- Theory of Concurrency (preferably)
- An interest in (cell) biology

Supervisors:
- Jetty Kleijn
- Fons Verbeek

MASTER COURSE/PROJECTS

Conclusion

- Projects presented are examples
     There are many more:
     PN: invariants, algorithms, localities, …
     Team automata

     …

- Interested or Ideas of your own:
  - Room 154
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