ESSE'2003

European Summer School on Embedded Systems

Experiences and Perspectives

Hans Hansson, Mälardalen Univ.
jointly with Prof. Sang Lyul Min, Seoul Nat'l Univ. Korea

MRTC
MÄLARDALEN REAL-TIME RESEARCH CENTRE

MÄLARDALENS HÖGSKOLA

European Summer School on Embedded Systems

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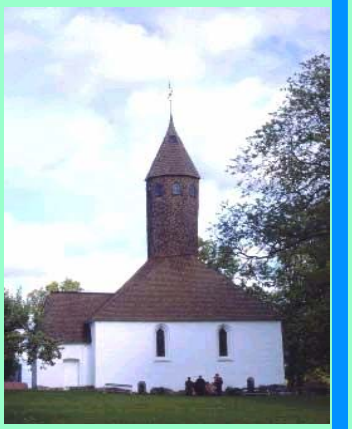
July 14 - October 8, 2003

Västerås, Sweden

Budget ~$200.000



Jointly organised by

Brain Korea 21

Nat'l Korean Initiative

ARTIST
European Netw. (EU)
on RT and ES

ARTES

Nat'l Swedish Initiative

CISS

Nat'l Danish Initiative

MRTC, Research Centre

at Mälardalen Univ, Västeås

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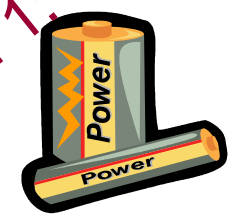
July

August

September

October

Period 1: Low Power



Period 2: Embedded Systems

Period 3: Real-Time Systems

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Themes:

Low Power

1. Intro & Overview
2. Dyn. Voltage Scheduling
3. Modeling and I/O Systems
4. OS Support for Low-power

Embedded Syst.

1. Intro & Overview
2. Pgming & Compilation
3. Simulation
4. OS & Middleware

R-T Systems

1. Intro & Overview
2. Synchr. Lang. Paradigm
3. Scheduling
3. Formal Methods

Lecturers:

Diana Marculescu (CMU)
Vivek Tiwari (Intel)
Luca Benini (Bologna)
Frank Bellosa (Erlangen)
Naehyuck Chang (Seoul Nat'l)
Kiyoung Choi (Seoul Nat'l)
Vijaykrishnan Narayanan (Penn State)
Carla Ellis (Duke)
Jason Flinn (Michigan)
Flavius Gruian (Lund)
Jihong Kim (Seoul Nat'l)
Wonyounh Sung (Seoul Nat'l)
...and more...

Soo-Ik Chae (Seoul Nat'l)
Petru Eles (Linköping)
Jakob Engblom (Uppsala)
Soonhoi Ha (Seoul Nat'l)
Krzysztof Kuchcinski (Lund)
Ben Lee (Oregon State)
Hyuk Jae Lee (Seoul Nat'l)
Jaejin Lee (Seoul Nat'l)
Zebo Peng (Linköping)
Alan Shaw (Washington)
Heonshik Shin (Seoul Nat'l)
Kang Shin (Michigan)
Henrik Thane (Mälardalen)
Reinhard Wilhelm (Saarland)
Wayne Wolf (Princeton)
...and more...

Giorgio Buttazzo (Pavia)
Gerhard Fohler (Mälardalen)
Nicolas Halbwachs (Verimag)
Seongsoo Hong (Seoul Nat'l)
Hermann Kopetz (Vienna)
Kim Larsen (Aalborg)
Insup Lee (Pennsylvania)
Jane Liu (Microsoft)
Al Mok (Texas)
Pascal Raymond (Verimag)
Paul Pettersson (Uppsala)
Lui Sha (Illinois)
Wang Yi (Uppsala)
...and more...

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Documentation published in Springer LNCS-series **+CD**

Topics covered

- (Unable to give overview now...)
- Many topics covered...
- Will publish documentation (LNCS+CD)
- Will summarize main points in report

ESSES – some figures

- ~85 students (19 from SNU participated all 11 weeks)
- Students mainly from Korea and Europe
- ~45 lecturers from Europe, US and Korea
  - A few (~5) from industry, most from academia
  - ~ 30 volumes of teaching material (may fit on a CD)
- Industrial presentations and field trips
- Dinners and social activities (3-5/week)

The ESSES experience

Don't try this at home!

- 3 months is a long period...(and some preparation was needed)
- But it was gret fun!
- Excellent co-operation with SNU (Sang Lyul Min)
- Enthusiastic staff and students!!!
- No major screw-up (suprisingly enough)

Lessons learned (Sang Lyul Min)

- Strong local support important
- No fee facilitates participation
- People from different areas (with different language) meet (... and start to talk)
- Good idea to co-locate with key-conferences (this time only with national RTS conf.)
- North-americans welcome! (but did not come this time)
- Better co-ordination of lectures -> improved quality
- Need to start marketing earlier (April too late)

ESSES as a role model

- ... Like automotive concept vehicles ...
- Special topics courses on ES based on ESSES material
  - Possibly supplemented by realistic projects
  - Flash memory-based storage device project tested in ES-period
- A more reasonable school model:
  - A series of 2-week schools on specific topics
  - Could put 2 of these back-to-back
- Non-lecture part needs to be better prepared
  - Workshop
  - Discussions
  - Assignments
- Open issues: funding, organisation, US-participation
- SNU and ARTES may be interested in a follow-up...

Other issues

- ES Grad. School initiatives in Sweden (and elsewhere)
  - PhD-level focus
  - ARTES++ and SAVE-IT
- Courses and mobility
  - Courses developed (Int'l co-operation welcome!!!)
  - Int'l mobility mandatory for students (co-operation required)
    - Bilateral and individual solutions should work fine
    - Could be facilitated by some infrastrructure
  - In general: increased co-operation welcome!

Also....

- ...looking for
  - Undergraduate students
  - MSc-students
- High-quality education – No tuition fee

Thank you!!