

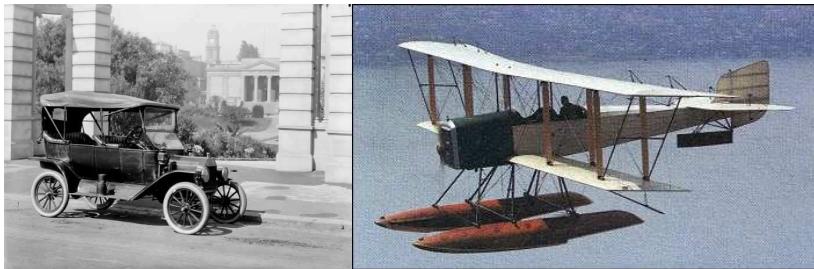
Software for Embedded Systems

José Costa

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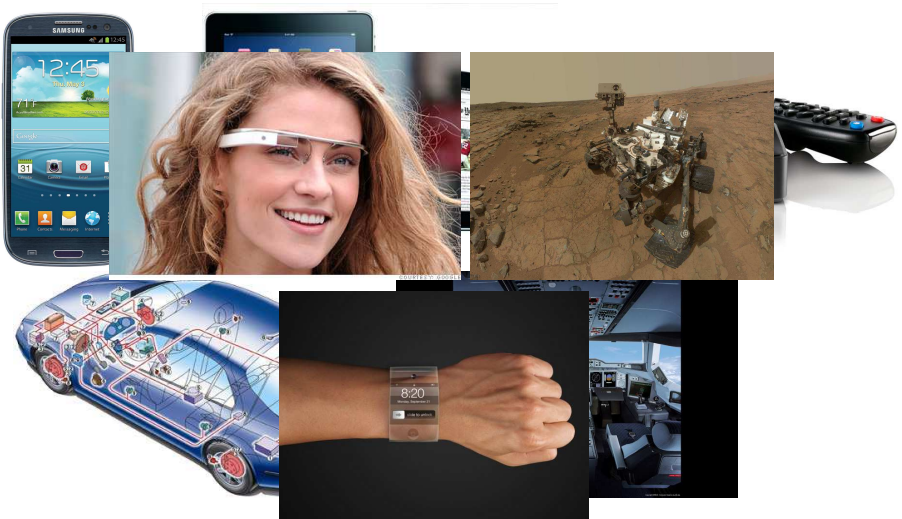
Departamento de Engenharia Informática (DEI)
Instituto Superior Técnico

2015-09-14



- Would Henry Ford and William Edward Boeing still recognize the modern car and the modern plane as cars and planes?
- They would on the outside!
- But on the inside software has replaced many many functions that were once purely hardware/mechanical
- And this is not only happening with cars and planes

Examples are Everywhere



- Cell phone
- Printer
- Automobile: engine, brakes, dash, etc.
- Airplane: engine, flight controls, nav/comm
- Digital television
- Household appliances

- **Embedded computing system:** any device that includes a programmable computer but is not itself a general-purpose computer
 - “computers inside equipments or products”
- Take advantage of application characteristics to optimize the design
 - don't need all the general-purpose bells and whistles

Understand the main characteristics of the life cycle, the development cycle and the software platforms of embedded systems.

- Main bibliography
 - Computers as Components: Principles of Embedded Computing System Design , Marilyn Wolf, Third Edition, Morgan Kaufman.
 - Lecture slides
 - Class Exercises

- Other references
 - An Embedded Software Primer, David E. Simon. Addison-Wesley. (Software architectures.)
 - Embedded Systems Architecture, Tammy Noergaard. Elsevier, 2005. (Technological environment – Hardware + systems software / middleware.)

- José Costa
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Subject: [ASE]

Office hours (ends after 15 minutes without students unless you tell me otherwise): Mondays, at 15h30
INESC-ID

- Theoretical classes
 - Mondays at 12h30
 - Tuesdays at 9h30

- Lab classes
 - Tuesday, 11h00-12h30
 - To start in week of 28/09

- Project: 35%
- Paper and presentation: 15%
- Exam: 50%
- Minimum grade of 7,5 to project and exam

- Available: 28/09
- Deadline: 20/11
- Done in group of 2 elements
 - Enrollment in groups will be announced next week
- For visualizations, groups will be organized in clusters
 - Each group of the cluster will present short (1 page) report on how its solution compares with others of the cluster
- Grade will be defined after visualization/discussion

- Topics available: 05/10
- Paper deadline: 27/11
- Done in group of 2 elements
 - Same groups as in the project
- To be presented at the end of the semester
- Submission of presentations until 12h on the day before the session

- 1st exam: 14/01, at 08h00

- 2nd exam: 26/01, at 18h30

- Bonus to students that make only one exam

- What are embedded systems?