ICSOFT/DATA 2016 panel

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It’s always hard to make predictions, esp., for the future

- General remark: most “experts” tend to agree that we are heading towards a future that will be:
  - Strong on cyber-physical systems = robotics with advanced AI
  - Replacing repetitive, manual tasks performed by (for the moment:) unskilled workers by automation
    - Robots + AI
    - 3D printing
  - Possibly relying on novel, cheap (solar) power

- … but experts are frequently over-optimistic, over-emphasizing progress, underestimating the intricacies of our complex society and the “unknown unknowns”

The oligopoly of the dinosaurs

- *Is software becoming a commodity? Is Everything-as-a-Service phenomenon going to commoditize most software systems and applications (distinguishable from competitors only by price)?*
- Are global companies going to use the Everything-as-a-Service modus operandi to take over most software production and delivery over the Internet?

- **IMHO: No – at least not now!**
- Global companies are mostly interested for our **data**! This is where the money is found.
- Probably, we will see platforms offered by global companies that export functionality and on top of them applications being created.
- Super hot area: medical data
- Train an AI system to assist doctors on diagnosis of e.g., cancer
- Export it as a function and let application developers use it

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- **Super hot area: medical data**
- E.g., Train an AI system to assist doctors on diagnosis of e.g., a certain type of cancer (you need data for this) & …
- … export it as a function and let application developers use it

- Collect –via sensors++ – the lifebits of a person in the corporate cloud
- Scale this up for millions of people
- Allow applications (not necessarily theirs) to do on-line / off-line diagnosis, interoperable exchanges, … for these data

The job market

- *Which computing jobs will have local employment markets and which will be subject of outsourcing to global companies?*
- *Does it make sense to educate and train programmers and software developers in developed countries, if global companies can get cheaper employees in developing countries?*

- IMHO: Developing countries / immigration / … are not the problem: **robots+AI** are (mostly for the less skilled people).

- Is AI going to replace programmers?
- IMHO: Not really. But they will intervene to the tuning / admin / parameter-setting / debugging / … black-magic voodoo tasks with suggestions, automatic tunings & fixes more and more..

- Food for thought (no, really): Is AI going to replace decision makers?

It's the end of the schools as we know them?

- *Are global educators offering MOOC (Massive Open Online Courses) going to take over most education, including IT education?*
  - *Possibly! This is a serious possibility, given the prestige, scalability and potential for cheap prices for large masses (gov.'s would love that)*
  - *Throughout the recent centuries, opening the access to info / knowledge / education is a very strong motive, despite establishment reactions*
  - *… but why haven't they done so yet? No, really: all they need is a pricing model. What's stopping them?*

It’s the end of the schools as we know them?

- *Is university-based "open" research going to stay relevant when compared with "closed" (confidential) research done by the global shakers & movers of IT industry?*
- No!
  - It has never been. Esp., compared to “closed” research.
  - Despite occasional successes (www), at least nowadays, most important advances come from the industry and the army
  - Our job as supervisors of young researchers has primarily been to train people (help them learn to understand SotA technology, find problems and innovate in solving them) – rather than actually solving the hard problems
- Yes!
  - My prediction is that in the future, university-based research will focus on more fundamental problems (“why is this happening?”) than practical / engineering ones (“a method for this”)

…

… and having said that, I am going to hide under the table now …

Thank you very much!

Muito obrigado!