Ten Years of Intelligent Environments Conferences :
Where have we been?
Where are we now ?
Where are we going from here ?

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www.intenv.org

Acknowledgements

- The title of this talk was inspired by that of the paper "Two Decades of Statistical Language Modeling: Where Do We Go from Here?" by Prof. Roni Rosenfeld of Carnegie Mellon University, USA. (Proceedings of the IEEE, **88**(8), August 2000)

- Thanks to Vic Callaghan & Liping Shen for inviting me to give this talk !

Background

- I am (I think) one of only two people to have had papers accepted & presented at all ten IE conferences, and have attended nine out of ten of them (Who is the other one ?) – although my paper for Mexico 2012 was presented remotely from the UK.

- Michael Schneider (more about him later) & myself were the only two (then) non-committee members to hold this distinction over the first five conferences.

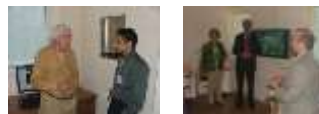- Hence, I'm in an (almost) unique position to look back at all ten conferences.

Background : Early 2005

- A colleague sent me some information about "The IEE International Workshop and Conference on Intelligent Environments".
- I had a look at the details, noted that it was about A.I. applied to "Intelligent Environments", and that it included a symposium on "Dialogue Systems" – and I had been working on "Statistical Modelling of Dialogue" for the previous few years.
- Also, it was in my home town, so I could combine it with a visit to my parents !
- I submitted a paper, and it got accepted

June 2005 : IE'05, University of Essex

- So, in late June 2005, we all went up to Colchester …
- There was a fascinating plenary talk on "The Adaptive House" by Prof. Michael Mozer of University of Colorado, USA – including some entertaining observations, warning of the dangers of over-generalisation !
- The main "themes" were :
  - UBIQUITOUS COMPUTING PARADIGMS AND SCENARIOS,
  - INTERACTING WITH INTELLIGENT ENVIRONMENTS,
  - AUTONOMOUS AGENT LEARNING AND CONTROL,
  - EMBEDDED COMPUTING,   - PERVASIVE COMPUTING,
  - USER-FRIENDLY SPOKEN LANGUAGE DIALOGUE SYSTEMS
  - INTELLIGENT ENVIRONMENTS, - AMBIENT INTELLIGENCE, - DOCTORAL COLLOQUIUM
- And the event included the "official" opening of Essex's "i-Dorm2"(now called the "i-Space") intelligent apartment.

July 2006 : IE'06, NTUA, Athens, Greece

- Co-Organised by NTUA School of Architecture,
- Hence, some themes such as "Interactive Installations and the Conception of Space" and "Crisis, Modernity and Information Technology"
- Keynote Talks included "Designing interaction for smart environments: Ambient Intelligence and the Disappearing Computer" by Norbert Streitz, "Architecture and information technology - A conceptual framework" by Antonino Saggio, and "The architecture of intelligent cities" by Nicos Komninos
- The conference dinner in a taverna near Monastitiki square continued well into the early hours – long after the Metro shut down !

IE'07 : Ulm, Germany

- Held in late September, spectacular thunderstorm
- Plenary talks included "Assistive Environments for Successful Aging" by Sumi Helal, "Self-Service Troubleshooting Automated Agents" by Roberto Pieraccini, "Situated Judgment and Ambient Intelligence" by Tom Rodden, and "Do Digital Homes Dream of Electric Families? - Architecting Consumer Experience" by Brian David Johnson
- First IE conference to feature a "Demo" session
- Dinner in a bierkeller by the Danube

IE'08 – Seattle, USA

- Held at University of Washington
- Included (I think) first "Smart Campus" Education Workshop
- (I think) Michael Schneider won Best Paper award for "The Intelligent Pizza Wrapper" !
- Included a tour of Microsoft's "Smart Home of the Future" at Microsoft Research, Redmond

IE'09 – Barcelona (Casteldelfels)

- "IE by the Sea"
- Plenary talk on "Sci-fi prototyping" by Brian David Johnson (plus short play "Nebulous mechanisms")
- And one on "The Future Internet in support of Intelligent Environments", by Marcus Brunner, of NEC Europe

IE'10 – Kuala Lumpur, Malaysia

- Held at Malaysian (Sunway) campus of Monash University.
- Plenary talks :
- "Experiences of TRON Intelligent Houses", by Prof. Ken Sakamura
- "Technology Innovation", by Dato' Dr. Kamal Jit Singh
- Very good food !
- My paper won "Best Short Paper" prize
- And Michael Schneider and myself each won "Long Service" awards !

IE'11 – Nottingham, U.K.

- Held at Nottingham Trent University

- Plenary Talk on "Energy-use monitoring in Smart Homes"

- After dinner talk by Brian David Johnson on "Science Fiction Prototyping and IEs"

- Michael Schneider wasn't able to attend, making me and one or two others only people with 100% attendance.

IE'12 – Guanajuato, México

- I lost my 100% attendance record ! (Due to unexpected family circumstances.)

- But I presented a paper "remotely".

- Raul "The Chilean Wolverine" made quite an impression !

- Plenaries on:

- *"iLearning: Create a Cloud-based Learning* Environments" by Minguan Wang

- and "*Intelligent Liveable Cities*" by Derek Clements-Croome

IE'13 – Athens, Greece (again !)

- Various problems due to General Strike (plus riot police on streets) !

- Strong focus on Architectural aspects of IEs.
- Demonstration on "Smart Space" models by students from University of Crete.

IE'14 – Shanghai, China (here !)

- Well-organised, good facilities and social events.
- Many interesting papers, good variety of topics.
- Many interesting people

So, where are we now ?

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Shanghai !   ;o)

So, where are we now ?

- So, I've summarised where we've been, …

- So, where are we now …
- (other than just "Shanghai") ?

So, where are we now ?

- IEs, or at least test-bed prototypes of IEs (such as smart homes) are now a reality, and we can perform genuine experiments with real people using & interacting with them

- Improved sensing technologies, greater computational power, …
- Improved A.I. Methods, statistical models, hybrid (e.g. ANN & Bayesian inference) reasoning systems.

So, where are we now ?

- Some "recurring themes" over the last ten years :

- Dialogue Systems,
- Smart Homes,
- Ambient Intelligence,
- Wireless Sensor Networks,

So, where are we now ?

- And some newer themes over the last few years :

- "Internet of Things",
- Cloud Computing,
- Augmented Reality,
- "Reasoning with uncertainty"
  (Fuzzy Logic or Dempster-Schafer Theory ?)

The Future :
So, where do we go from here?

- The next (say) ten years :

- IEs, Dialogue Systems, etc. will almost certainly become more commonplace (already in supermarket check-outs, etc).

- More data, better models, better technology

- Learning to live with/in IEs – HCI and privacy issues.

The Future :
So, where do we go from here?

- Longer Term :

- "The singularity" ?
- Fear it or look forward to it ?

- Learning to live with "Strong A.I." (if it is attained)

Answer to Trivia Question

- Who is the other person to have had papers accepted for and presented at all ten IE conferences ?

- Vic Callaghan
- (I think he's the only one ?)

Acknowledgements

- Vic Callaghan (for encouraging me to keep coming to IE conferences)
- Many current & past committee members, for encouragement
- Liping Sheng and this year's organisers, for inviting me, plus Bowen Xie for much help.
- Many past & present colleagues & students -without whose contributions all those papers wouldn't have been written !

THANK YOU

Any Questions ?

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