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1. University Degrees:

- 1998-2001: KTH - Stockholm, Computer Science - Autonomous Systems,
- 'Civilingenjör'-2001 Grade Point Average 4.7 out of 5.0,
- Masters' Thesis: Projection of a Markov Process with Neural Networks.
- Unique in having defined the thesis topic proposal, being the industry contact, as well as doing the thesis work.
- 1980-1983: Queens College, City University of New York,
- Bachelor of Arts-1983, Magna Cum Laude, Physics, Honors in Physics. Grade Point Average 4.1 out of 4.3,

2. Doctoral Degree:

- 2002-2005: KTH - Stockholm, Center for Autonomous Systems,
- Ph.D-sept. 2005, Computer Science, Thesis: Simultaneous Localization and Mapping with Robots.
- Adviser: Henrik Christensen
- one of the first to demonstrate a complete working original graphical SLAM algorithm on a robot.
Graph SLAM approaches have now become standard for very hard problems. The thesis also showed some of the earliest working vision SLAM systems. There were numerous innovations in these systems exploiting symmetries and invariances as well as generic representations for partially observable features.

3. Post-Doctoral Appointments:

- 2006-2007: Post-doctoral Fellow, Massachusetts Institute of Technology, MIT
- Designed and implemented an underwater feature based navigation system.
- Advising on automating ship hull inspection by robots.
- Technical lead of the MIT Darpa Urban Challenge team: Played a major roll in forming the team and writing the funding proposal (granted). Was then forced to leave the team due to family illness.
- 2006: Researcher (Post-doc), KTH-Center for Autonomous Systems, - 6 months
- Implemented a vision based navigation system using SIFT features on a Packbot robot.

6. Current Employment.

- 20100801- Research Scientist, Research part 80%. Centre for Autonomous Systems
Kungliga Tekniska Hogskolan, School of Computer Science and Communication, KTH-CSC
- 2010 Teaching: Applied Estimation 7.5 hp, all lectures, labs, project, and exam
- 2010 Guest Lecturer: MA in Advanced Product Design, APD2 5ID098 Emerging Technologies, Umeå University
- Advising PhD. and Master thesis work: Main supervisor for 3 Master theses (2 completed, 1 in progress);
- Two conference submissions accepted;
- Worked on optimizing autonomous robot search for objects using vision in a multiple room environment;
- Developed the anti-particle filter which is a new approach to nonlinear estimation;
- Attended a 3 hp course in thesis advising, LH207V at KTH;
- Grant activities:
Proposals to VR (2010 not granted), (2011 under review),
Participant on proposal to European Clearing House for Open Robotics Development (EChORD) (granted),
Participant in an EU Integrated Project proposal (not granted).

7. Previous Employment

2007-2010: Research Scientist, Massachusetts Institute of Technology, MIT

- Responsible for achieving a robust autonomy on an underwater robot. This includes new algorithm development, the complete software implementation, and extensive ocean testing. The software contributed includes detection of features in forward looking sonar images, the dead-reckoning, vehicle modeling, the automatic mapping and matching of *a priori maps*, current estimation, interpretation of information for mission execution, the mission execution, the actuation PID control, and a sonar servo based control. This system estimated the ocean current and could use negative information to help localize the AUV underwater. This work was done in close collaboration with several industrial partners, (Nekton/iRobot, SeaByte, BlueView) and the US Navy.

2001-2002: Research Engineer, KTH-Center for Autonomous Systems,

- Designed and implemented a software system for an outdoor robot as part of an FMV project.
- The system includes a SICK laser scanner, sonar, inertial sensor, camera, compass, GPS, pan-tilt, arm and robot motion control.
- Autonomous capabilities include obstacle avoidance, person following, road following, localization and goto using a map, exploration and map making, use of the arm to look under and around a vehicle...
- Lead a team of graduates and undergraduates, who worked on some of the specific parts.

1989-2001: Work unrelated to research, mostly self-employed actuary consulting, (computers and math).

1987-1988: Synchronous Communications, Inc., San Jose CA, Telecommunications Engineering,

- Evaluation and modeling of solid state lasers, fiber optic splicing,
- Designed an alarm board for our FM laser transmitter,
- Project leader and design engineer for a 10 channel vestigial sideband TV link on a single fiber, (first such system). This then was still a best seller for the company 6 years later.

1983-1986: State University of New York at Stonybrook, Instructor,

- Taught classes in undergraduate physics and calculus. Astonished the math dean when one of the students took it upon himself to schedule an appointment with the dean where he expressed his appreciation for the teaching.

1975-1987: Work unrelated to research (waiter)

9. Breaks in Research

In January 2006 my wife became ill with cancer. This caused me to take a leave from MIT and return to Stockholm and work at a lesser pace while I helped her cope and took care of the children. This is now much less of a problem as I work in Stockholm and the children are older.

During 20060901-20100701 I had been working on a project that while interesting was of an applied engineering nature and did not allow for significant academic publications.

20090101-20091201 I worked on a start up company idea (75%), one patent ready for issue, one patent application under review.

Other University Studies

1983-1986: State University of New York at Stonybrook,

- Candidate for a Ph. D., Theoretical Physics. The candidate status required passing a comprehensive exam which had a 50% pass rate and no possibility of retaking the exam (received one of the highest grades). There were also a list of required courses and an oral exam (also with very good results).
- Grade Point Average 3.8 out of 4.0,

1978-1979: Cooper Union College, New York, Mechanical Engineering. Grade Point Average 2.8 out of 4.0,

Honors

1983 to 1986 University Fellowship, State University of New York at Stonybrook,

1983: Queens College, City University of New York,

- Member Phi Beta Kappa
- Women's Club Award; Annual award for outstanding graduate,
- Paul Klapper Physics Award; Top physics student,
- Chancellor's Honor Roll; The City University of New York's highest academic distinction.

Passion

Playing piano.