



Reaching for the Stars

He graduated at the age of 23 with a PhD, has conducted pioneering research work and published two successful books. He is currently collaborating with the RTA on a technology that will reduce road accident fatalities, has just won the Research Excellence Award 2009 last December and he welcomed the birth of his first child Walid. Here Dr. Mohamed Watfa, Assistant Professor in the Faculty of Computer Science and Engineering opens up about his life and work.

What streaked your interest in the field of research and science?

Since my high school days and the early days of personal computers, I was very interested in playing a part in the fast growing field of information technology. I witnessed the evolution of the desktop computers from the introduction of a powerful 32-bit computer capable of running advanced multi-user operating systems at high speeds in the early 90's to the release of the Pentium microprocessor in the mid 90's and the dawn of the Internet and telecommunications. As soon as I started my Bachelors degree in Computer Science, I knew I was destined to do my doctorate degree in Computer Engineering where I would be able to utilize my research skills. Not only that, I also set my mind to do that as soon as possible while I had the energy which resulted in taking up to 20 credits in some semesters. I was also motivated by my elder brothers Walid and Ali who both work in software engineering companies in the States and were guiding me through every step.

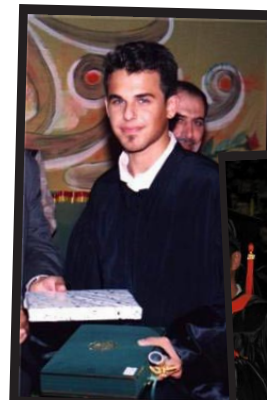
What was the secret to your success in terms of concentration, discipline and self-set goals, despite being at a ripe age, where life for many is all about fun and frolic?

My young age was never a setback for me. On the contrary, my young age was one of the reasons I was able to focus on my studies and graduate with distinction both at my undergraduate and graduate studies. That did not prevent me of still having fun when possible. I was (and by the way still I am) very well- disciplined and self-motivated especially when I work under pressure. I always end up finding these magical wings that will give me the ability to fly to my goals. For example, one of the main reasons I was able to finish my Masters and PhD so quickly was that I was prepared and I had in mind what my research dissertation would be about and have already thought of possible solutions to the proposed problems while I was even doing my undergraduate studies. All undergraduate students should start researching any ideas they might have at very early stages should they plan to continue their graduate studies in their respective areas.

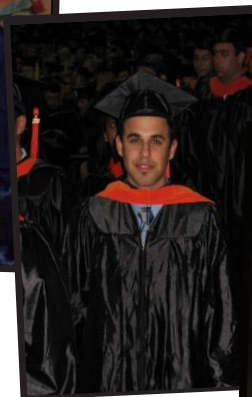
Your new book 'Coverage Strategies in Wireless Sensor Networks' focuses on intelligent transportation systems and as per the details you are in talks with the RTA to apply the technology. How will this help the community at large?

My recent book which is a result of five years of research and a direct result of my PhD dissertation deals with three dimensional coverage and connectivity in sensor networks. Sensor networks are a new class of distributed systems composed of distributed sensors, actuators, computation, and wireless communication. One of several applications of the results of this book is intelligent transportation systems and an important goal in transportation systems is to reduce the dramatically high number of accidents and their most of the time fatal consequences especially in Dubai. To reach this goal, a good approach in modeling the communications in the highway would be considering it as an ad-hoc wireless network with the mobile cars as mobile nodes that are dynamically connected to static wireless sensor networks deployed on the roads. The information gathered by such sensors can be used to prevent accidents using a wireless sensor network deployed on the highways or determine the severity of accidents after they happen. According to the World Health Organization, about 3000 people die in crashes each day worldwide and the financial cost of these crashes is more than 230 Billion dollars. These accidents could be due to the fault of the driver, the other driver, or due to careless driving. The main causes for car accidents are irresponsible

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High School



Masters



PhD

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behavior and a lack of respect for the traffic regulations. Using some of my proposed algorithms, some of these fatal accidents can be minimized.

Pollution problems are rife in this day and age, and your book also focuses on a way to detect undersea pollution? Did you have such an idea in mind before you started your research?

As mentioned before, the book is more tailored towards theoretical approaches to analyze three dimensional coverage and connectivity of sensor networks. An application would be three dimensional undersea monitoring and pollution detection. This is one of my current research projects where sensor nodes are deployed under water to monitor the water pollution levels and send them to an external web server for analysis. When I started my research, underwater sensors with wireless communications were not available then and they have evolved as my research progressed.

UOWD is encouraging research and the recent launch of the FRC is a way to boost the profile of faculty members. How has the university helped you realize your dreams in the field of research and invention?

Dr Hamming (one of the pioneers in communication theory) once said: "If you are to do important work then you must work on the right problem at the right time in the right way." I would like to add a phrase to his saying which is: "in the right place". UOWD has really been extremely helpful since I have joined them in August 2008. I consider myself also a bit fortunate as 2008 was the year that Prof. Rob Whelan was appointed as our new president. Prof. Rob has bigger dreams for UOWD than those set for it before he joined it. He has a research mentality which would set UOWD as one of the top research universities in the region. I have approached Prof. Rob more than once with regards to his support in some research requests and he has yet to decline any request of mine. The university has an excellent infrastructure for research which is still in its infancy. One of the only drawbacks I would see in my current research position in UOWD is the lack of graduate students in computer science, a fact that has led us to involve some less qualified and overloaded undergraduate students in our current research projects.

You have a passion for teaching and are known to have a unique approach. Could you tell us more?

I have never seen teaching as a burden. Quite the contrary, it's something I found both challenging and enormously gratifying, which is why I've sought out so many opportunities to teach over the past years. For me, one aspect of joining a university faculty that I found most interesting is the teaching opportunity. I believe teaching is not just conveying knowledge, but conveying enthusiasm. I think teaching is an opportunity to make a real difference with students, awaking their curiosity and sparking their interest. My approach in teaching involves befriending my students and treating each and every student equally. I deliver my messages using humor and visually appealing graphics. Also, technology has always played a big part in my teaching where online tools and forums have been utilized to have discussion groups in my classes.

Winning the Research Excellence Award in 2009 and launching your new book have both been the most recent feathers in your cap. What would you say to inspire others?

As you said 2009 was a remarkable year for me where I have won the research excellence award and also launched my new book. On a separate note, I was also blessed with my first baby boy Walid. With God's blessings and hard work, I am sure 2010 would hopefully be even better. It is said that: "Opportunity dances with those who are ready on the dance floor." Let us be ready to take every chance we can to cultivate our ideas and transform them into useful applications and projects. Let us motivate each other and work together to achieve bigger goals. I would like to also say that we all should be willing to share our failures as well as our successes. Others will relate to us. They'll understand that they're not the only ones with challenges and problems.

If you'd like to know more about Dr. Watfa, visit his website: <http://mohamedwatfa.synthasite.com> or contact him at MohamedWatfa@owdubai.ac.ae

“The most valuable lesson I have learnt so far is to take advantage of every moment that passes by. Every moment is a picture that we have never seen and will probably never see in the near future”

Dr. Watfa with his wife Diana



Dr. Watfa holding his little genius, Walid

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