Assoc. Prof. Dr. R. Badlishah Ahmad

Please relate your educational experience

I received my Diploma in Electrical Communication (UTM) in 1992. Right after that I worked for 4 months as a technician, operating and maintaining Surface Mount Technology (SMT) machines in SONY (TV), Bangi, Selangor. Then I signed up for a bachelors degree in electrical and electronic engineering program in (B.Eng in Electrical & Electronic Engineering) at the University of Glasgow in UK. Even before graduating I was offered a scholarship by Universiti Sains Malaysia to further my studies for MSc and PhD. In September 1995 I completed my MSc in Optical Electronics and started my PhD in January 1996. I managed to complete my PhD in December 1999 which was on High Speed All Optical Network Modelling and Performance Analysis.

You have been talking of "embedded computing" for quite some time now. What is it?

Embedded computing (a.k.a embedded system) is a computer system that performs specific tasks to control, process and maintain specific functions. Embedded computing exists in automobiles, airplanes, home appliances, military vehicles & equipments, medical devices, robots, mobile communication systems and others. Sophisticated embedded computers have been used in products and systems for over twenty years. The simplest form of embedded computing is a microprocessor or microcontroller. It is a computer which has enough functions to control input and output devices such as relays and sensors as opposed to general purpose desktops or notebook computers that have various applications such as spreadsheet, database, word processors etc. Appliances such as washing machines, air-conditioners and others are based on 8 bit architectures and the processor speed is around 10MHz-40MHz. Advances in integrated circuit technology have brought more powerful processors and high speed architectures such as 32 and 64 bit systems, used to develop embedded systems such as Internet Protocol (IP) smart cameras.

Why did you choose embedded computing?

I chose embedded computing because it is the only way for Malaysia to develop technologies that can be used to control aeroplanes, manufacturing machines such as robotic arms, electronic controller for cars, helicopters and robots! In fact, a simple Wireless Access Point which we use to access Wireless LAN is an example of an embedded system which involves software and hardware design. There is an Open Source Software Foundation (OSF) that promote sharing of source codes. A successful technology developed by OSF is a free kernel called GNU/Linux that has become a part of OS's that is available for everybody to copy, modify and use without any restriction as long as he/she gives the same right to other people. There are plenty of source codes available for us to understand these FREE and OPEN technologies to enable us to develop our own Malaysian made embedded products compared to proprietary software development tools. In the future there will be plenty of applications that require compact, low cost, reliable and robust embedded systems. Embedded Linux is an embedded system using high end, powerful processors such as ARM, SuperH, Intel and AMD with a GNU/Linux operating software. In fact I believe some of the embedded products available in the market are using GNU/Linux OS. Malaysians have to start thinking and planning on how to generate future engineers who have the capabilities to develop high end embedded systems. Presently, there are hardly any engineers in Malaysia who are working on developing device drivers for devices such as web cameras, printers etc., without which we cannot develop our own computer hardware. There are however embedded systems based on Digital Signal Processing (DSP) chips, Field Programmable Gate Array (FPGA) and System On Chip (SoC) based on VLSI. I realise the need to start and plan for this interesting research area in UniMAP.

You are the Dean for the School of Computers and Communications as well as the cluster Head for Embedded Computing. One is purely administrative while the other is more research coordination. How do you divide your time and effort for both these functions?

My experience in using GNU/Linux and the time I spend reading about computers and embedded systems fuel my passion in embedded Linux research. As a dean I rely on my staff to assist me in implementing university policies. The way I divide my time is to make sure at least a day in a week, usually Fridays, I will spend my time with my post-graduate students and staff to discuss anything regarding research, the rest is spent on administration. With this arrangement I have the advantage to view and evolve academic programmes in my School. Of course it is quite tiring but if you are not tired than you are not working right?

It is said that computers have changed our lives. How much more of our lives will be affected by this revolution?

There will be plenty of changes awaiting us in the future. Everything has now been "computerized". It should make our lives easier with everything controlled and monitored by computers. This means I will have plenty of time to spend in the golf course, right?? But No, There will always be new inventions that need to be created. There are so many things that I can think of in terms of the advancement of computers. Things such as automatic traffic controls, where there are intelligent traffic lights, intelligent cameras that detect any traffic offenders and summonses being sent automatically through email. No need to go for groceries or clothing because on-line shopping is efficient and reliable. Theoretically we will have plenty of time to spend on other things such as family and the rest will be handled by computers, except for the computer operators (if human) because they need to monitor the functionality of all the computerized systems and make sure there are no malfunctions which will bring total chaos. I think Steven Spielberg has a better idea on predicting how the future looks like.

It is understood that you are one of the younger generation of researchers. Where, would you like to see research in UniMAP, head towards?

I would like to see UniMAP become a university that produces high quality graduates and excels in applied as well as in fundamental research activities. Therefore the collaboration among researchers within this university is very crucial. It is the most difficult challenge in any university, to get all its researchers to work together. The advantage of putting researchers together is that it synergises everyone, fuelling further technology development. The more we collaborate the stronger we get and thus more successful research can be achieved while maintaining it within the university. Good research, produces good researchers and good lecturers, thus good curriculum and graduates who will contribute towards the Malaysian economy as what has been done by giants such as HP, Intel and Microsoft towards the success of US's sustainable economy.

What is the most important characteristic for a person to qualify as a researcher and why?

For me there are three, knowledge, creativity and ability to express ideas in writing and his speech. You need knowledge and creativity to come up with new ideas based on the latest technologies available. From there your ideas will evolve parallel with the technologies and it will be relevant as room for improvement will always be there.