

Samuel N. Cubero

Ph.D (USQ, Mechatronic Engineering), B.E. Hons (UQ, Mechanical Engineering)
Australian Citizen (fully educated and lived in Australia since age 2, from 1974-2010)
www.samcubero.com

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Main areas of expertise and interest (listed in order of skilfulness or competence)

Mechanical Engineering, CAD, Stress/failure analysis, Component Design & Manufacturing

Mechatronics (Automation, Robotics, Motion Control, Sensors and Manufacturing systems)
(Designing and building new mobile robots, robotic arms, transfer tools, mechanisms, etc.)
Much experience with pneumatics, hydraulics, electric motors (DC & AC) & controllers.

Electrical & Electronics Engineering (circuit design, devices, microcontrollers, PCB design)

Software Engineering, Programming & Development tools (PCs, Embedded controllers, IoT)
(3D simulation and game programming for PC's using 3D game engines and animation tools)

Project management and consulting to develop and prototype new products & inventions
(including procurement, ordering of parts, dealing with suppliers, managing teamwork, etc.)

Education & technical training (taught about 22 different subjects at 4 different Universities)

Served as Course Coordinator for 'Mechatronic Engineering' at Curtin University, Australia

Research: Published 42+ papers & book chapters, 3 patents and 1 book (won several grants)

Conflict resolution, Dealing with difficult people, Negotiation, Persuasion & Influence

Motivation, Teamwork, Leadership, Coaching, Goals, Planning, Time management

Productivity, Psychology, Emotional Intelligence, Communication skills, Charisma & rapport

Created data-driven websites; used Moodle (Quizzes & Calculated questions) & Blackboard

Business: Owned & operated a website development company, Perth, Australia (2002-2005)

Picture / photo editing, and audio/video editing (VideoStudio, Camtasia, OBS, Audacity, etc.)

Computer Vision (object & colour detection, feature recognition), VR (Virtual Reality), AI

Most important values (what I expect from myself & others): honesty, results & self-control.

I also collect self-improvement books & completed studying over 130 of these so far. I have a collection of over 700 online video training courses on all the topics listed on this page.

ACADEMIC HISTORY Educated entirely in Australia: Primary, Secondary & Tertiary

1998 Ph.D, Doctor of Philosophy (Mechatronic Engineering), University of Southern Queensland, Australia
 1993 B.E. (Hons) Mech, Bachelor of Engineering Degree (Honours) Mechanical, University of Queensland
 1986-89 Top student in maths & science, Year 9-12, Coorparoo State High School, Brisbane, QLD, Australia
 1985 Top student (7 distinctions and 2 merits) in Year 8, Wynnum State High School, Queensland, Australia
 Studied piano music 7 years. Won 23 gold, 13 silver & 8 bronze medals; Junior Piano Champion 1987.

UNIVERSITY TEACHING EXPERIENCE Full-time, since mid-1998, about 21.5 years

Curtin University	308824 (E)	Mechatronic Project 234 (microcontrollers/electronics, robotics) **
(Australia)	308828 (E)	Mechanical Design 321 (stress/failure analysis, machine design) **
EA accredited	308809 (E)	Engineering Graphics 232 (AS1100 drawing, AutoCAD 2D/3D) **
	(E)	Engineering Communications 321 (Excel, AutoCAD 2D/3D) **
	308827 (E)	Mechatronic Automation 331 (Pneumatic circuits, PLCs, PID) **
	12906 (E)	Mechatronic Systems Design 431 (robotics, PC control, sensors) *
USQ	ENG4104	Engineering Problem Solving 4 (MATLAB simulation, control) *
(Australia)	MEC2304	Solid Modelling (ProEngineer WildFire, 3D parts & assemblies)
EA accredited	ENG4406	Robotics & Machine Vision (control, simulation, programming) *
	MEC2402 (E)	Stress Analysis (Solid mechanics, 2D/3D load & failure analysis) *
	ENG2102	Problem Solving 2 (PBL design/analysis of a real-world project) *
	MEC2902	Mechanical Practice 2 (Warman contest, mobile robot design) *
	ENG1101	Engineering Problem Solving 1 (surveying, 1 st year PBL project)
Petroleum Institute	STPS201	STEPS 1 (PBL design & build project, SolidWorks 3D CAD) *
PI (UAE)	STPS251	STEPS 2 (MS-Project, FEA, design & build mobile robot contest) *
ABET	MEEG201 (E)	Statics (force / moment equilibrium, 2D/3D load analysis, beams) *
accredited	MEEG345 (E)	Intro to Manufacturing (machining, CNC G-code, workshop tools)
(all courses	MEEG490/491	Senior Design 1 & 2 (2 semester) Final year engineering projects
are taught in	ENGR293	Eng. Design in Community Service (design & build hardware) **
English)	ENGR110 (E)	Introduction to Engineering (calculations, design & build projects)
PI merged with	ENGR150 (E)	Intro to Eng. in the Petroleum Industry (seismic surveying, drilling)
Khalifa University	ENGR111 (E)	Engineering Design (Design process, 3 design & build projects) *
KU (UAE) mid 2017	MECH356 (E)	Mechatronics (gear design, motor control, electronics, robotics) *
	MEEN325 (E)	Mechanics of Solids (Stress analysis, combined loading, failure) *

** Created all original teaching materials for these *new* subjects; * New materials created for *existing* subjects.
 (E) means Examiner / sole lecturer / coordinator; No (E) means 2 or more teachers or a teaching team (shared).
 Received near or above 'Department Average' teaching evaluation scores for almost all courses and all classes.

OTHER WORK EXPERIENCE

Completed 330+ hours of training at AMTC (Advanced Manufacturing Technology Centre), Perth, in areas of welding, machining (lathe turning, milling, CNC), MasterCAM 2D, 2.5D and 3D milling & Foundry practice.
Organized "International Conference on Mechatronics & Machine Vision In Practice" (2001), Perth, Australia.
Demonstrated new technologies on TV and at many science exhibitions for students and the general public.
Created & presented several professional development lectures and workshops: Time Management, Teamwork, Communication skills, Dialogue and persuasion skills, Windows and Microsoft Office (Word and Excel skills).
Research: Published over 41 peer-reviewed conference papers, journal articles and/or book chapters; Winner of 3 competitive research grants and 4 industry research grants; Supervised Ph.D and Masters (postgrad) students;
Supervised over 140 'Final year' project students (over 45 successful 'design & build' 4th year student projects).
Consulted for many Australian companies to design and build over a dozen different new machines & devices.
Mechanical Engineer at Mindustrial Design & Management Services, Brisbane (internship 1993). Programmed several AutoLISP applications for automating AutoCAD drawing procedures based on geometric data from a database of catalogue dimensions for standard sections (BHP beams like ASB, PFC, EA, UA, and hollow tubes like RHS, SHS, CHS), and bolts, etc. Automatic drawing of steel sections, standard bolts, and MIM standard stairs with tread was made possible with my software, increasing CAD drawing productivity by over 10 times.

PRINCIPAL APPOINTMENTS (full time work)

1998-2007 (9 years, tenured from 2001): *Lecturer*, Curtin University of Technology, Perth, WA, Australia
 2007-2010 (3 year contract): *Lecturer*, University of Southern Queensland (USQ), Toowoomba, Qld, Australia
 2010- June 2020 (10 years): *Assistant Professor* in Mechanical Engineering, KU (since mid-2017). Worked in General Studies (engineering support department, College of Arts & Sciences, PI, from mid-2010 to mid-2017).

PUBLICATIONS & CONFERENCE PAPERS (all peer reviewed and published)

- (43) S. N. Cubero, M. Badi, M. Al Ali, and M. Alshehhi, "A high-speed camel dung collection machine", Paper 080, in Proc. 26th Int. Conf. on Mechatronics and Machine Vision In Practice (M2VIP 2019), Dec 3-5, Toowoomba, Queensland, Australia.
- (42) S. N. Cubero, "A Review of State-of-the-Art Simulation and Motion Capture Technologies for Practical Training and Education", Paper CF8016, in Proc. Int. Conf. on Advanced Technology Innovation ICATI 2018, June 27-30, Krabi, Thailand.
- (41) S. N. Cubero, "Strategies for Self-Regulated Learning using VR", in Proc. 5th International Conference on Sciences, Technology and Social Sciences (ICSTSS), Dubai, UAE, 2017
- (40) S. N. Cubero, "Essential communication skills for engineers, scientists and multi-disciplinary teams", in Proc. Int. Conf. on Society, Education and Psychology (ICSEP 2016), Paper No. PS10017, IEDRC.org, Dubai, UAE, 2016.
- (39) S. N. Cubero, "Over-speeding Warning System using Wireless Communications for Road Signs and Vehicles," in Proc. 13th Int. Conf. on Engineering & Technology, Computer, Basic & Applied Sciences, (ECBA 2016), 10-11 June, Dubai, UAE, 2016. (ISBN No. 978-969-670-549-9)
- (38) S. N. Cubero, "A fun and effective self-learning approach to teaching microcontrollers and mobile robotics", in IJEEE (International Journal of Electrical Engineering Education); vol. 52, 4: pp. 298-319, October, 2015 <http://ije.sagepub.com/content/52/4/298.abstract>
- (37) N. Pasha-Zaidi, E. Afari, J. Mohammed, S. N. Cubero, A. M. Shoukry, and W. El-Sokkary, "Gender -Based teams: Perceptions of team satisfaction and effectiveness among engineering students in the United Arab Emirates" in International Journal of Engineering Education. Vol. 31, No.4, pp.953-966, 2015.
- (36) Cubero, S. N. 2015. "A Mobile Manipulator Arm for Assisting the Frail Elderly and Infirm," Machine Vision and Mechatronics in Practice, Springer-Verlag Berlin Heidelberg, Print ISBN 978-3-662-45513-5, Online ISBN 978-3-662-45514-2 (eBook), pp 135-147, <http://www.springer.com/engineering/robotics/book/978-3-662-45513-5>
- (35) S. N. Cubero, J. Billingsley, "Game Development Tools for Simulating Robots and Creating Interactive Learning Experiences," Machine Vision and Mechatronics in Practice, Springer-Verlag Berlin Heidelberg, Print ISBN 978-3-662-45513-5, Online ISBN 978-3-662-45514-2 (eBook), pp 113-134, 2015. <http://www.springer.com/engineering/robotics/book/978-3-662-45513-5>
- (34) S. N. Cubero, J. Billingsley, "Design Concepts for an Energy-Efficient Amphibious Unmanned Underwater Vehicle," Machine Vision and Mechatronics in Practice, Springer-Verlag Berlin Heidelberg, Print ISBN 978-3-662-45513-5, Online ISBN 978-3-662-45514-2 (eBook), pp 209-223, 2015, <http://www.springer.com/engineering/robotics/book/978-3-662-45513-5>
- (33) S. N. Cubero, "Developing the Creativity and Design Skills of Mechatronic Engineering Students with Labs and Robot Competitions," Machine Vision and Mechatronics in Practice, Springer-Verlag Berlin Heidelberg, Print ISBN 978-3-662-45513-5, Online ISBN 978-3-662-45514-2 (eBook), pp 287-307, 2015, <http://www.springer.com/engineering/robotics/book/978-3-662-45513-5>
- (32) S. N. Cubero, "A Mechatronic Spotting System that mimics Human Weight-training Assistance Behavior," In International Journal of Embedded Systems (IJES), IJNNGT, Journal ISSN Online: 2356-5942, Journal ISSN Print: 2382-2562, Vol. 1, July 30, 2014, <http://www.ijnngt.org/upload/journal9/p7.pdf>
- (31) S. Sorby, S. N. Cubero, N. Pasha-Zaidi, H. Karki, "Spatial Skills of Students in the United Arab Emirates," In Proceedings for the Engineering Leaders Conference on Engineering Education, Doha, Qatar, 2014.
- (30) S. Scott, J. Ahmad, S. N. Cubero, K. Alhammadi, J. Mohammed, "Multidisciplinary panel critiques design performance," In Conference proceedings for the 121st American Society of Engineering Education annual conference and Exposition Indianapolis, IN, USA, 2014.

- (29) S. N. Cubero, J. Billingsley, “Simulating the kinematics and motions of robotic manipulators using 3D game development tools,” In Proc. 20th Int. Conf. on Mechatronics and Machine Vision in Practice (M2VIP 2013), Sep. 19, Ankara, Turkey, pp. 143-155, 2013.
- (28) S. N. Cubero, "Simulation and Control of Robot Arms and Manipulators using Blind Adaptive Search Inverse Kinematics," International Journal of Simulation, Systems, Science and Technology (IJSSST), vol. 13, no. 2, pp. 35-50, 2012. ISSN 1473-8031 print, 1473-804x online. UK.
- (27) S. N. Cubero, “Design concepts for a hybrid swimming and walking vehicle”, Journal Procedia Engineering, vol. 41, no. 39, pp. 271-280. ISSN 1877-7058, 10.1016/j.proeng.2012.07.303. Also in Proc. International Symposium on Robotics and Intelligent Sensors (IRIS 2012), Paper No. 4, Session A42 (CD-ROM disc), Kuching, Malaysia, 2012.
- (26) S. N. Cubero, “Robotic horse-training technologies for cutting and campdrafting competitions”, Journal Procedia Engineering, vol. 41, no. 169, pp. 1211-1220, 2012. ISSN 1877-7058, 10.1016/j.proeng.2012.07.303. Also in Proc. International Symposium on Robotics and Intelligent Sensors (IRIS 2012), Paper No. 5, Session D23 (CD-ROM disc), Kuching, Malaysia.
- (25) S. N. Cubero, “Automatic shape recognition of hand gestures using an edge-tracing vision system”, International Journal of Image Processing and Visual Communication, vol. 1, no. 3, pp. 1-6, 2012. ISSN (Online) 2319-1724.
- (24) S. N. Cubero, “A robotic arm for electric scooters,” Intelligent Technologies for Bridging the Grey Digital Divide, J. Soar, R. Swindell, Rick, P. Tsang, (Eds.), Abu Dhabi, UAE, IGI Global, pp. 94-109, 2011.
- (23) S. N. Cubero, J. Billingsley, and J. Mohammed, “Mechanical design of an amphibious walking and swimming robot,” Proc. 18th International Conference on Mechatronics & Machine Vision in Practice (M2VIP), Brisbane, Australia, 2011.
- (22) J. Mohammed, S. N. Cubero, J. and Ahmad, “Developing alloys using metal deposition”, in Proceedings of the Arab school for science and technology – new frontiers in material science and technology, Kuwait, 2010.
- (21) S. N. Cubero, “ESRA – Electric Scooter Robot Arm,” for M2VIP 2010 IEEE conference proceedings on CD-ROM. Editors: Robin Bradbeer & John Billingsley. Australia, 2010.
- (20) S. N. Cubero, “Designing competitions to enhance mechatronic engineering education”, for M2VIP 2010 IEEE conference proceedings on CD-ROM, 2010. Editors: Robin Bradbeer & John Billingsley. Australia, 2010.
- (19) J. Worden, S. Goh, L. Brodie, H. Zhou, S. N. Cubero, “A case study on the revitalisation of a 2nd level year engineering and spatial science PBL course”, Proc. AaeE 2009 conference, Adelaide, Australia, 2009.
- (18) S. N. Cubero, “Blind Search Inverse Kinematics for controlling all types of Serial-link robot arms,” Mechatronics and Machine Vision in Practice – Editors: Billingsley, J and Bradbeer, R. ISBN: 978-3-540-74026-1. pp 229-246, Australia, 2008.
- (17) J. Portlock, S. N. Cubero, “Dynamics and Control of a VTOL Quad-Thrust Aerial Robot,” Mechatronics and Machine Vision in Practice – Editors: Billingsley, J and Bradbeer, R. ISBN: 978-3-540-74026-1. pp 27-40, 2008.
- (16) S. N. Cubero (Editor). “Industrial Robotics: Theory, Modelling & Control”. pIV literature, Verlag Robert Mayer-Scholz. Advanced Robotics Systems (ARS) International ISBN: 3-86611-285-8 (952 pages), Germany, 2007.
- (15) K. Sanathkumara, S. N. Cubero, “Automated Soil Hardness Testing Machine”. Proceedings of M2VIP 2006 14th International IEEE Conference on Mechatronics & Machine Vision in Practice, Xiamen, China. ISSN: 1908-1162. 2006.
- (14) J. Portlock, S. N. Cubero, “QTAR: Quad Thrust Aerial Robot”. Proceedings of M2VIP 2006 13th International IEEE Conference on Mechatronics & Machine Vision in Practice, Toowoomba QLD, Australia. ISSN: 1908-1162. 2006.

- (13) B. Frost, S. N. Cubero, “Development of a 3D laser scanner for guiding a six-legged walking robot”. Proceedings of M2VIP 2005 12th International IEEE Conference on Mechatronics & Machine Vision in Practice, De La Salle University, Manila, Philippines. ISSN: 1908-1162. pp 26-36, 2005.
- (12) D. Tjoe, S. N. Cubero, “A low-cost vision guided car for autonomous racing car competitions, ”. Proceedings of M2VIP 2005 12th International IEEE Conference on Mechatronics & Machine Vision in Practice, De La Salle University, Manila, Philippines. ISSN: 1908-1162. pp 1-14, 2005.
- (11) S. N. Cubero, “Teaching Mechatronic Engineers how to build intelligent machines”, Invited 3 hour presentation, Proceedings of M2VIP 2005 12th International IEEE Conference on Mechatronics & Machine Vision in Practice, De La Salle University, Manila, Philippines (CD-ROM), 2005.
- (10) S. N. Cubero, “A general purpose inverse kinematics algorithm for all manipulators”. Proceedings of M2VIP 2004 11th Int’l IEEE Conference on Mechatronics & Machine Vision in Practice, Macau, China, 2004.
- (9) S. N. Cubero, J. Layanto, M. Goode, “Autonomous Racing Car Competition for Mechatronic Engineering Education”. Mechatronics and Machine Vision 2003: Future Trends. Research Studies Press. ISBN: 0-86380-290-7. pp 9-16, 2003. (Also published on the M2VIP 2003 10th IEEE International Conference on Mechatronics and Machine Vision In Practice Conference Proceedings CD-ROM ISBN 962-442-246-X.)
- (8) S. N. Cubero, “A 6-legged Hybrid Walking and Wheeled Vehicle”. Proc 7th International Conference on Mechatronics and Machine Vision in Practice (M2VIP), Hervey Bay, QLD, Australia, September 19 – 21, 2000, pp. 293-302 "Mechatronics and Machine Vision", Research Studies Press, ISBN: 0 86380 261 3.
- (7) S. N. Cubero, “Design of a six-legged passenger carrying hybrid walking vehicle with four-wheel-drive capability”. Proc 2nd International Conference on CLimbing And Walking Robots (CLAWAR), pp. 361-372, September, 1999, Portsmouth, UK, "CLAWAR: CLimbing And Walking Robots", ISBN 186058 207 9.
- (6) S. N. Cubero, “Force, compliance and position control for a pneumatic quadruped robot”. PhD dissertation, Submitted Nov. 1997 - University of Southern Queensland, Toowoomba. Australia. 2 Volumes (approximately 1,500 pages). Doctoral PhD was awarded in September 1998 by the Vice-Chancellor of USQ. 1998.
- (5) S. N. Cubero, J. Billingsley, J., “Force, compliance and position control for a space frame manipulator,” in Proc 4th International Conference on Mechatronics and Machine Vision in Practice (M2VIP), 22-24th Sep., pp. 124-130, 1997.
- (4) S. N. Cubero, J. Billingsley, “Automatic control of a surface adapting, four-legged wall climbing robot”, Mechatronics '96 With Mechatronics & Machine Vision in Practice '96, University of Minho, Geuimaraes Portugal, September 1996, pp 1.135-1.142.
- (3) S. N. Cubero, J. Billingsley J., “A novel proportional gas valve for mechatronics applications”. Proc 2nd International Conference on Mechatronics and Machine Vision in Practice (M2VIP), Kowloon, Hong Kong, 1995, ISBN 962-442-076-9 (Patent filed in 1995 by National Centre for Engineering in Agriculture or NCEA, QLD)
- (2) J. Billingsley, S. N. Cubero, “High speed manipulators for agricultural applications”, Proc. 1995 National Conference of the Australian Robot Association, Melbourne, July 1995, pp 54-58.
- (1) S. N. Cubero, J. Billingsley, “Automatic surface transition adaptation for a quadrupedal space frame robot”, Proc. Second International Conference on Mechatronics and Machine Vision in Practice, Hong Kong, September 12-14, 1995, pp 113-118.

NOTE: There are a few more papers - not listed above – that were not published to protect commercial interests.

Google Scholar citations: (click on “29 ARTICLES” to view PDF papers or abstracts)

https://scholar.google.com/citations?view_op=new_articles&hl=en&img=Samuel+Cubero

Example paper: (PDF format) <http://ijssst.info/Vol-13/No-2/paper5.pdf>

Research Gate.net citations: (click to view many indexed PDF papers or abstracts)

https://www.researchgate.net/scientific-contributions/2067206054_Samuel_N_Cubero?claimPup=true

MAIN SKILLS & INTERESTS (very brief summary only)

Mechanical Engineering, Machine design & Manufacturing

CAD: AutoCAD 2D (26 years) & 3D, SolidWorks (9 years), Inventor (5 years), ProE WildFire/CREO (1 year)
Load & material failure analysis: 2D & 3D force analysis (Statics), Solid Mechanics (Von Mises, fatigue etc.)
Gearing & Power transmission design: Gear equations, power-train design (shafts, bearings), reflected inertia
Machine component selection & design: Beam analysis, shaft analysis, design against yield failure & fatigue
Actuators: Electric motors (DC brushed, brushless/stepper, AC, solenoid), hydraulic, pneumatic, PZT, SMA etc.
FEA stress & deflection analysis: Free Body Diagram analysis, ANSYS, SolidWorks Simulation, Inventor FEA
Structural analysis: 2D trusses & 3D space frames, design against failure (yielding, fatigue, buckling, vibration)
Kinematics, Dynamics and Control simulation: Trigonometry, 2D & 3D vector analysis, State Space modelling
Workshop skills (General fitting & turning/metalwork), plastics: forming/injection moulding, composites, welds
Experience with arc welding (Stick & MIG), drilling, turning, milling, sheet-metal work, sheet bending, etc.
CAM (Computer Aided Manufacturing): MasterCAM for creating CNC machining code (for CNC mill / lathe)
3D printing, rapid prototyping: ABS plastics, elastomers; 3D scanning and model creation (for casting patterns)
Materials & manufacturing methods: Metals, plastics / elastomers, organics (woods), composites, casting, etc.

Mechatronics (Automation, Robotics, Motion Control, Sensors, Controller design)

Design of new Automation systems, Mobile robots, Robotic arms, Walking vehicles, Power-suit Exoskeletons
PLCs (Programmable Logic Controllers): FESTO STL & Ladder programming, Allen-Bradley, Square-D, etc.
Microcontrollers / Embedded systems: Arduino & Arduino Studio C programming, Atmel/Microchip AVR
STK500/ICE, PIC, Motorola HC11 (assembly language coding), 6809, LEGO Mindstorms EV3 (programming)
High-level microcontroller coding: AVR Studio ASM, BASCOM-AVR (BASIC) compiler, CodeVision C, etc.
Mobile robot design and testing: Design of mobile field robots (wireless ROVs, UUVs and UAVs) - Remote
Operated Vehicles (ROVs), Unmanned Underwater Vehicles (UUVs), UAVs (Unmanned Aerial Vehicles)
Machine Vision (1D, 2D), Object recognition and identification: Software development, edge tracing, OpenCV
Laser range-finding and 3D surface scanning (with custom-written 3D graphics display software for Windows)
Sensors: Inductive, capacitive, optical; load cells, position, speed, flow, force, temperature, pressure, GPS, IMU
Incremental Encoder wheels (Rotary and Absolute non-contact encoders), up-down counting chips & software
Circuit design: Analogue & Digital electronics; Semi-conductors; Schematic circuit design using CAD software
Choosing resistors, capacitors, coils, relays, switches, diodes, transistors, MOSFETs, Op-amps, crystals, 555 etc
Power supply and opto-isolated circuit design: Voltage regulation, rechargeable batteries, opto-isolators, etc.
PCB (Printed Circuit Board) design and manufacturing (using Protel / Altium and/or Eagle CAD), acid etching
Serial & data communications: RS-232, WinSock, USB, Zigbee (XBee) wireless, Ethernet and WiFi networks

Software development, Design tools & Software skills

PC & Windows programming: Software development for MS-DOS, Windows (C/C++, Visual Basic) & Linux
Serial communications programming: COM ports, USB, WinSock, TCP/UDP, LAN networks, protocol design
3D Studio Max (1 year): 3D Object editing, modifiers, UV texture mapping, animation, lighting, camera control
3D & VR tools & development: Unreal Engine 4, HTC Vive / Oculus Rift, motion capture, Perception Neuron
Video & Sound editing: OBS, Nero Vision, Camtasia, Corel Video Studio, Audacity, Roxio PC Game Capture
Website design & creation: HTML, FrontPage, Website X5 Evolution 9/10, IIS, ASP / VBS, SQL, Plesk, FTP
Microsoft Office & related tools: Word 2.0-2016, EndNote, Excel, PowerPoint, Access, Outlook, MS-Project

Essential ‘soft skills’, values and philosophies (a good MOS: Mental Operating System)

Since 2011 I completed studying over 130 books about success skills, psychology, dealing with difficult behaviours.
Time management: Goal setting, prioritizing objectives, planning & scheduling, monitoring progress / feedback
People skills: Safe communication, conflict resolution, persuasion <http://www.ijiet.org/vol7/917-PS10017.pdf>
Teamwork: Aim for win-win / consensus outcomes, avoid ‘internal competition’; grow the ‘pool of knowledge’
Leadership: Motivate & inspire people; Create respectful, productive environments where it is safe to speak
honestly; promote growth, creativity, productivity & innovation; remove obstacles to improvements & progress.
PPPPP = Proper Preparation Prevents Poor Performance! *Apply QUICKER ACTION to achieve good results:*
QUICKER: Questions should guide all goals (good questions lead to good answers), Understand all variables /
objects, Imagine relationships/connections & test them, Choose the simplest solution, **Keep** an open mind,
Examine advantages and disadvantages of each of your options, **Results** only come from ACTION, not excuses.
ACTION: Ask the experts for advice, **Collect** all necessary information / skills / parts / resources, **Test** all ideas
& assumptions, **Improve** your ideas (plans & designs), **Organise** all activities and tasks, **Never** give up (Nothing
builds credibility like finishing ability); Exude positive emotions: Passion, Enthusiasm, Excitement, Optimism,
CARE: Consider, Assist, Respect and Empower others, and remember to **SMILE:** Simple Makes It Lots Easier!

HOBBIES & OTHER INTERESTS

I am an avid collector of psychology, self-help and personal improvement books. For example, I strive to study at least one new book every week, or at least one every two weeks (usually best-selling popular books that have over 4 or 4.5 star reviewer ratings on Amazon). I have studied many modern books (over 130) dealing with topics like psychology, conflict resolution, people skills, productivity, teaching, negotiation and influence skills, leadership, time-management, success attitudes and habits, wealth, and body language, including favourite titles like: *Limitless*, *Unlimited memory*, *The Effective Executive*, *High Performance Habits*, *Boundaries*, *The Magic of Thinking Big*, *HBR- On Leadership*, *Dealing with People you Can't Stand*, *Brainblocks*, *The 7 Habits of Highly Effective People*, *High Performance Habits*, *Captivate*, *The Obstacle is the Way*, *Influence*, *The 5 essential people skills*, *Crucial Conversations*, *Crucial Accountability*, *The Toyota Way*, *The Lean Startup*, *Become a Professional Inventor*, *The Millionaire Fastlane*... and many other books written by famous authors like Simon Sinek, Anthony Robbins, Brian Tracy, Robert Kiyosaki, Bob Proctor, Robin Sharma, etc. (See attached book list of over 250 books. I also have a collection of over 500 printed books and over 200 CD/MP3 audiobooks.) I purchased and have access to over 700 different video tutorial courses that teach a wide range of different practical skills (most of them, at www.udemy.com). I subscribe to several other online video tutorial learning websites, such as www.devu.com and www.lynda.com (or www.linkedin.com/learning), so I am able to learn almost any new topic or advanced practical skill very easily and quickly. When I study each book or each course, I create my own detailed notes and summaries that cover the most important points and practical skills. On my holidays, when I have several weeks free, I enjoy learning about and studying computer game development (coding), 3D animation and VR / AR technologies (using 3D game engines, programming languages, and animation software), however, this is a very big field and I am still learning the basics. Other hobbies I enjoy include piano playing (composing new music and songs), chess, and regular gym workouts (I usually exercise 2 hours almost every day, doing mainly cardio and weights to train every major muscle group at least once or twice a week). One of my goals is to see my 6-pack abs again.

REFERENCES

<p>Dr John Billingsley Professor (Chair) PhD (Cantab) MA (Cantab) BA CEng CPEng FIET FIEAust SenMIEEE (also inventor of world's 1st laser printer)</p> <p>John.Billingsley@usq.edu.au</p>	<p>Chair of Mechatronic Engineering, Former supervisor University of Southern Queensland (USQ), Australia. Director of Technology Research, National Centre for Engineering in Agriculture / NCEA (QLD)</p> <p>https://staffprofile.usq.edu.au/Profile/John-Billingsley</p> <p>Tel: +61 7 4631 2513 (Brisbane time GMT +6 hours)</p>
<p>Dr Tilak Chandratilleke Professor (Chair) PhD (Cambridge) BSc (Hons) MIEAust CPEng MASME MSLASS</p> <p>T.Chandratilleke@exchange.curtin.edu.au</p>	<p>Former Head of Department, Former Manager Mechanical & Mechatronic Engineering, Curtin University of Technology, Perth, Australia</p> <p>Tel: +61 8 9266 7047 (Perth time GMT +4 hours)</p>
<p>Dr Ian Howard Professor PhD(WA) BEng (Hons) MIEAust CPEng</p> <p>I.Howard@exchange.curtin.edu.au</p>	<p>Former colleague, Curtin University of Technology, Automatic Control, Linear Systems, Mechanics expert</p> <p>Tel: +61 8 9266 7591 (Perth time GMT +4 hours)</p>
<p>Paul Deuchar - ex CEO Argon Robotics Senior Consultant, Chairman</p> <p>paul@deuchar.com.au</p>	<p>Former CEO of Argon Robotics (Western Australia) Former final-year student of Dr Sam Cubero, Curtin University of Technology, Perth</p> <p>(See his profile on www.linkedin.com)</p>

BRIEF BIOGRAPHY

I was born in Manila, Philippines, in 1972, however, I was too young to learn the ‘Filipino’ (Tagalog) language. My parents were fortunate enough to qualify to emigrate to Australia, so they moved to settle in Brisbane in 1974, when I was only a 2-year-old baby. My formal education (primary, secondary and tertiary schooling) was completed entirely in Australia. I scored mostly ‘straight A’ grades in High School subjects (I was the ‘top student’ in every year), and I also earned ‘above average’ grades in most courses in my Mechanical Engineering Bachelor’s degree course at the University of Queensland (graduating with Honours in 1993). I accepted a scholarship to begin my postgraduate Ph.D research at the University of Southern Queensland (USQ) under the supervision of Professor John Billingsley (inventor of the world’s first working ‘laser printer / laser phototypesetter’, and many other machine vision systems and walking robots). I completed my Ph.D in Mechatronic Engineering in 1998, after building and controlling Australia’s first 4-legged pneumatic walking robot, controlled by newly patented ‘Floating Plate Gas Valves’ or FPGVs – controllable proportional-flow solenoid valves which I developed and analysed. (You can read more about this in the ‘Research’ section at my website: www.samcubero.com) In 1998, I accepted a job at Curtin University, Perth, Western Australia, and created and taught many practical hands-on courses there relating to mechatronics, computer vision and mobile robotics. In 2007, I accepted a 3-year contract to work as a Lecturer at USQ, specializing in Mechatronics and Mechanical Engineering. In summary, I grew up in Australia since the age of 2 (since 1974) and lived there for about 37 years. I moved to the UAE in 2010 to accept an ‘Assistant Professor’ position to teach ‘STEPS 1 and STEPS 2’ (design and build project courses) to 1st and 2nd year Engineering Students at the Petroleum Institute (PI), Abu Dhabi, and several other Mechanical Engineering subjects, such as ‘Statics’, ‘Introduction to Manufacturing’ and a few others. In 2017, the Petroleum Institute (PI) and Masdar Institute (MI research University) both merged with Khalifa University (KU) and became one giant University, under the management of KU.

Over the past 21+ years working as a full-time academic specializing in Mechatronics and Mechanical Engineering, I have gained much hands-on experience in the design and manufacture of almost all types of machines, automation systems and robots controlled by electronics, computers and software. I am very experienced in the fields of robot manipulator design, manufacture and control (including FK, IK simulation and modelling, dynamics analysis, sensors, motion control and end-effector programming), actuator design (including variable position, speed and force control), mobile robot design and control (wheeled vehicles, walking machines, UAVs), machine design and analysis, material failure analysis (modelling and FEA simulation), CAD (2D engineering graphics, drawing and 3D modelling), workshop manufacturing processes (including CAM and CNC machining), electronic circuit design, circuit and component analysis, PCB fabrication, embedded systems / microcontroller design and chip programming, high-level PC programming, sensors, machine vision hardware and software design (CCD digital camera selection and design and construction, feature detection and image recognition), 2D and 3D graphics programming (for machine animation and simulation), and 3D game engine software development (including VR and motion capture). I am a member of the M²VIP (Mechatronics and Machine Vision In Practice) international steering committee (a group of robotics and machine vision experts), and helped organize various international conferences, technology exhibitions and competitions relating to modern mechatronics and machine vision. In the past, I assisted organizations such as IEEE (RAS–Robotics Automation Society), TDC (Technology Development Committee, Abu Dhabi Government), ThinkScience, and Innovator (served as a judge at Science Exhibitions and competitions, UAE).

So far, I have supervised over 140 final year engineering students and over 45 different practical projects that were successfully designed, built and demonstrated - several of which had won ‘1st place awards’ in prestigious UAE ‘Best design project’ competitions involving approximately 50 or more competing projects from all around the country. For example, the ‘Final Year’ project students that I recently supervised built a working prototype of “A cooling suit for outdoor workers”, and they won the 1st place ‘Best Project’ award in the ‘ThinkScience Fair 2019’ technology competition, out of 50 of the best projects from over 20 different Universities and Polytechnic institutions around the country (UAE). This project also went on to win two other ‘Best project’ awards in the region. Another project, the “Automatic car-parking system” that I supervised in 2012, won the same ‘Best project’ award out of 50 other final-year student projects. The prototype was a scaled-down working model of a robotic parking system that can lift and move one individual model car for placement in one of many designated parking bays, where the entire carpark is similar in appearance to a vertical stack or rectangular array of several large mailboxes or empty cells. The system can also automatically retrieve and return the model car to the starting position. More examples of successful ‘Senior Design Projects’

(or SDP “Final Year” projects) can be seen in the YouTube demonstration videos at: www.samcubero.com ; and at my YouTube channel: s cubero

In Australia, I filed patents for 3 original inventions and was the main inventor, co-inventor or co-designer of over a dozen mechatronic machine prototypes, several of which have been successfully commercialized. I also appeared on TV several times and in several newspaper reports and stories in Australia, e.g. self-driving autonomous vehicles that my students built, a combat robot competition involving 16 fighting robots, and the SPI (Straying Prevention Indicator) - the world’s first Lane Departure Alarm (LDA) for road vehicles – a machine vision system that warns a driver that his vehicle is drifting out of its painted road lane inadvertently. This system can warn a driver of a dangerous lane change – often caused by careless driving (i.e. not watching the road ahead), driver fatigue (e.g. ‘driving while sleepy’) or driving while impaired (e.g. dangerous ‘drink driving’). The LDA invention and its concepts are now being implemented on many ‘high end’ luxury cars.

SUPERVISION OF ENGINEERING STUDENT PROJECTS

I have designed many hands-on ‘design and build’ courses at the PI, Khalifa University, over the last 10 years, where students work in teams of 4 or 5 students to interpret the main problems or project requirements, identify and prioritize the most important goals (i.e. objectives, constraints, functions, metrics for measuring success), solve many technical and design problems based on existing knowledge and independent research, generate several different effective solutions and new designs (i.e. technically feasible alternatives or viable options), and make confident decisions using a methodical, non-linear, multi-objective decision-making process that helps to minimize personal bias. The following links show some of the very impressive results achieved by our KU undergraduate students, which I believe, are world class:

Examples of Senior Design Projects at Khalifa University

<https://youtu.be/0ImHWxmrwWY>

The following links demonstrate student design skills and learning outcomes I have been able to achieve in classes that I have personally taught.

Bottle collecting competition 2013 (Khalifa University) – 2nd year STEPS 2 students

<https://youtu.be/ILZPqCMepiQ>

2nd year projects for Stair climbing contest (Khalifa University) – STEPS 2 students

<https://youtu.be/Y5P4xSeMux4>

Examples of undergraduate engineering student design projects - Part 1

<https://youtu.be/brDYbnzBUGM>

1st year projects using LEGO EV3 (Khalifa University)

<https://youtu.be/hneiFDRU3Yg>

I desire to see many more successful high achievers realize their full creative potential and become successful product developers and inventors. I work hard to teach and help students to become technically competent and courageous enough to design, build and commercialize new advanced and innovative hardware and software technologies. I also strongly encourage talented students to create a new business that can employ many people, like some of my past students who I taught in Australia (e.g. Joshua Portlock, Paul Deuchar and Glen Richmond—who founded their own companies and employed many people).

Check out the new robot that Robert Reid is working on... (one of my past Curtin University students)

https://youtu.be/X1LhrTflc_4

Mr. Robert Reid worked at NASA, JPL, USA - look up his profile at www.linkedin.com or click on this link here:

<https://www.linkedin.com/in/rgreid/>

Here you will find videos demonstrating the kinds of skills that my former students have learned and used in advanced research projects. For example, Robert Reid worked on the NASA ‘Hedgehog’ jumping robot:

<https://www.youtube.com/watch?v=FPyVGRwegvU>

<https://www.youtube.com/watch?v=CM7zr9vOCbU>

In his final-year project at Curtin University, Robert designed, built and programmed a mobile robot that can drive around and create a 3D visualization - or 'point cloud' scan - of its surroundings, using sophisticated SFM (Structure From Motion) machine vision algorithms. He also worked on designing and building high-tech devices for space applications, such as asteroid surveying and scanning systems, and mobile robots for low-gravity space applications.

For example, in the following video, you will see my former “Final Year Student” demonstrate a new flying vehicle he designed and built from scratch, using only raw components. Mr Joshua Portlock was a student that I supervised at Curtin University (in Perth, Australia) in 2005, where he designed and built Australia’s first controllable hovering UAV (Unmanned Aerial Vehicle) quad-copter (or 4 propeller) drone with VTOL (Vertical Take Off and Landing) capability – built long before commercial drones were available in Australia, and at a time when similar UAV drones from Europe and the USA were selling as high as \$22,000 AUD. I was Joshua’s SDP (Senior Design Project) supervisor and taught him skills in Mechatronics (e.g. mechanical design, AVR microcontroller programming, electronic circuit design, sensors and motor control in several subjects) which helped him to control all the motors and design a successful prototype UAV, known as QTAR (Quad Thrust Aerial Robot) UAV. Please watch this short promotional video for Curtin University (in Australia, where I worked for 9 years):

<https://youtu.be/ou6XzHKlvOg>

The first QTAR flying drone project that I supervised (My name appears in the credits near the end):

<https://youtu.be/MLxe3FuQ3v0>

See Joshua’s TED talk here:

https://youtu.be/NAeck_NuFE28

See his latest invention here:

<https://www.youtube.com/watch?v=dtrwamsrO4Q>

Also, I supervised the Final Year Project of Paul Deuchar, who designed and built a flying hovering device (similar to a UAV drone) but it had no moving mechanical parts! He was the founder and former CEO of Argon Robotics (Perth), a company that designed robotic systems for the local mining and manufacturing industries in Western Australia. Paul managed Argon Robotics for many years and employed up to 50 graduate students. Paul is currently the CEO of www.use-verb.com. I also taught Glenn Richmond - CEO of CRM Online - data management software company. Many of my previous students became successful entrepreneurs who created new businesses and employed graduate students to support the local economy.

In summary, almost all of the projects that I supervised resulted in the successful design and manufacture of fully-operational working prototypes, because the students I supervise are exposed to practical modern ‘real-world’ technologies, components, development tools and hands-on manufacturing skills. Examples of real-world projects include new robotic manipulators, novel walking machines, vision guided self-steering mobile robots with built in microcontrollers, flying and controllable quadcopter UAV drones with IMUs (Inertial Management Units) that were entirely built from individual components, and robotic surfboard simulation platforms like this, designed and built in 2 months by a few 2nd year students that I supervised.

<https://youtu.be/pfqSBY3TjDw>

Currently, I am helping students to design and build a wearable pneumatic exoskeleton robot (to enhance human strength and endurance 3 times), an electric-powered ‘Sea Rescue Device’ and a multi-degree-of-freedom computer-controlled compliant fruit picking robot that bends like a rubbery ‘Octopus leg’, or moves like an ‘elephant trunk’. This manipulator employs a large number of pneumatic bellows and proportional-flow-control pneumatic valves. The designs for these projects have almost been completed and will be manufactured soon.

Typically, I enjoy supervising about 10 to 20 students each year for their ‘Senior Design Project’ (SDP). The older ‘Final Year’ design projects from Australian Universities are shown in the “Example Projects” YouTube links at: www.samcubero.com, however, the most recent ‘Final Year’ projects or ‘Senior Design Projects’ at

Khalifa University, Abu Dhabi, can be seen at my YouTube channel: S Cubero (search for “S Cubero” or see the first 5 YouTube links mentioned earlier).

Matchbox collecting competition I organized in 2005:

<https://www.youtube.com/watch?v=5XCJC3RRZds>

Smart gym final-year (senior design) project I supervised:

<https://www.youtube.com/watch?v=pCnOz58B0Fs>

I also appeared in the Channel 10 TV News, Australia, “Robot Wars at Curtin University” story:

<https://www.youtube.com/watch?v=ozs-2eTEyko>

Many other practical design-and-build projects can be viewed in the 'Example Projects' section at my website: www.samcubero.com . Also, watch the videos at my YouTube channel, by searching for: s cubero

In conclusion...

I am very successful at guiding, coaching and supervising students and teams of engineers to become successful prototyping experts, and proficient at learning, using and building new Mechatronics / Automation / Robotic hardware and technologies. I believe that my skills can be put to good use in a 'teaching role' as an instructor, e.g. 'Professor of Practice', SDP (Senior Design Project) supervisor of “Final Year Projects”, and postgraduate student supervisor. My strongest skills are in teaching, setting up labs and demonstrating practical applications of Mechatronics and Robotics. I also have several new and exciting inventions and projects that are currently being developed right now, some of which are commercially viable, and able to attract future industry funding and industry partnerships. I also possess a great deal of emotional intelligence, communication skills, psychological acuity and influence skills to overcome ANY type of obstacle, including dealing with and fixing almost any kind of bad behavior and serious ‘people problems’ (e.g. difficult behaviors, conflicts, disagreements, lack of cooperation, stone-walling, protests, in-fighting between team members, laziness, or lack of motivation, etc.) – after studying more than 130 books about human psychology, dealing effectively with all types of difficult people, influence, negotiation, leadership, teamwork, collaboration, safe communication, problem solving, motivation, and habits and attitudes of the most successful and most productive people in society.

I believe that I can make a big positive difference at your institution with my technical knowledge and effective teaching skills (which are rated by students as 'above department average' in most semesters). Also, in every semester, at every University, I have always been able to ‘Meet Expectations’ every year for my teaching, service and research, and with enough funding, I can even ‘Exceed expectations’ in terms of research outcomes.

I can design and build almost any new kind of product or hardware using conventional workshop tools. Several research projects I had developed in the past involved collaborative links with industries within my local region and a few research and development projects involved researchers from local and overseas Universities. Please view my 'CV' and read about projects that I had successfully completed or supervised which were funded from external sources, mainly local businesses and industry partners. Over the years, I have also applied for and won 3 different competitive research grants to fund robotics research projects, and I supervised several postgraduate research students in Australia (PhD and Masters students). I also enjoy supervising final-year mechatronic or mechanical engineering projects relating to the design and manufacture of new machines, robots and automation systems, many of which are useful to local industry.

Mission statement: http://samcubero.cuberobots.com/MX_mission_statement.html

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Please call during normal business hours, or between 9am to 6pm. If you are having difficulty contacting me, please send an Email to one of my personal Emails shown above.

VIDEO CHAT

I am able to meet with you online using ZOOM (www.zoom.us) or the ‘Bluejeans’ video chat software at www.bluejeans.com . For example, we can meet online at a common time, and chat via www.linkedin.com (text messenger), so I can give you a ‘Meeting Room number’ that you can connect to. Unfortunately, Skype does not work in the UAE due to Government restrictions on internet video and VoIP (Voice over IP) applications.

WEBSITE

www.samcubero.com To view YouTube demo videos, click on ‘Example Projects’.

www.linkedin.com Search for my name: Sam Cubero

www.youtube.com Search for my channel: s cubero