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February 1, 2018

**TO WHOME IT MAY CONCERN**

**RE: Executive Summary of Engineer Afsaneh Cooper’s Portfolio**

I am a student in two courses this year at ECU and South Metropolitan TAFE in Perth, WA.

**About my B.Sc. Course [19974-1984] Period**

I am a Mechanical Engineer in my B.Sc. degree but that degree was a double major in **Mechanical Solids Design** and that is why it is written in transcript its length was 5.5 years Equivalent full time that is 1.5 years longer than a 4 years B.Sc. degree. Since my B.Sc. degree course happened to be in the period before and after Iranian Revolution [Monarchy transition to Republic] Universities shut down 3.5 years all up. I also had one semester break.

I studied by Iranian Government **English Competency Scholarship** [I`zam Muhhassil] during university shut down 1 [before revolution] in USA-San Diego State University, California [SDSU] for 9 months. This included passing two tests [GRE and TOEFL] to be admitted at SDSU and studying 2 units of 3rd year Mechanical Engineering. Revolution in Iran happened, my father died and I had to support my brother for his study in USA, so I gave all my USA family fund to my brother to continue his study to graduation and returned to Iran to be able to return to Iran and stay with my sick father.

After **Iranian Revolution** we only studied one semester and again universities were shut down by **republican revolutionary government** for **Cultural Revolution** to change the universities curriculum to a better and more relevant to industry and jobs, perhaps retrenching some academics for their **Political Standing** at that time.

However the Iranian President had just established a Centre for Research into Mechanical Engineering - Machine Design [Iranian Research Organisation for Science and Technology] in Tehran with best academics from Tehran University [with jobless academics as employees] and another Centre for Research into Renewable Energy Research [with jobless academics]. I worked in these two research centres during closure of universities while I was waiting that universities be opened again.

Since there were a lot of academics who did not have anything to do at that time, I started translating my text book in Turbo-machinery from English to Persian, then got help from two of my classmates and created a team for that “Turbomachinery text book, by Dixon” we just passed its unit before our university closes down. After we translated half of that book, we three classmates asked our lecturer of that unit to supervise us for editing the translated book, while we were completing the rest of the book. Dr Sarmast got the idea from me and met our Vice Chancellor Dr Ali Akbar Salehi [graduate of MIT] and they both established two centres: a) Ministry of Power first Renewable Energy Centre, b) Ministry of Power first designing and manufacturing Water Turbine centre.

Then I and two of my classmates with Dr Sarmast were shifted to the new building, which was just established for **Design of Water Turbines**. I asked two other classmates to join us too and we were a team of 5 students and our lecturer in Turbo-machinery, when we went to the empty new research centre. Soon another team of three joined us from **Tehran University**. Therefore we became a team of 8 people from two best Tehran universities [**Sharif University of Technology** and **Tehran University**]. I was the main team member at the beginning, when we started at **Power Ministry** and arranged to visit a **Francis Turbine** in City of Hamedan in West of Iran, which was installed at the top of a mountain, which had a river and a water fall. The two lecturers who were supervising the team decided that Francis Turbine was very complex and Dr Rad was also with us. Dr Rad was specialist in Fluid Mechanics and he had a hard time climbing that mountain with young engineering students in the team. Dr Rad was head of our Mechanical Engineering department at **Sharif University of Technology**, where I studied my B.Sc. degree. Dr Rad, Dr Sarmast [Lecturer of Turbomachinery] and another doctor from Tehran University decided that I should not persist on Francis Turbine to design! But suggested the research should be done on **design and manufacturing of a Pelton Wheel** instead, which is a simple **Water Turbine**. I guess they thought at that time we were just consumers for purchase of Francis Turbine and had no expertise in such sophisticate water turbine, we visited in Hamedan in our research trip. Then the team for design of water turbine started by dis-assembling an old Pelton Wheel to learn how to design that turbine by reverse engineering in the new centre for water turbine research.

We three classmates completed our translation and the **first Persian Book in Turbomachinery was published** with the cost of a new centre for **publication of university books [Jihad Danishgahi]**. However since our lecturer Dr Reza Sarmast had the certification to edit and publish university text books, Dr Sarmast did all the work for publication of our book and I am not aware of the book itself as we were just happy to work at that time and did not worry about whose name goes on the book. I did not even see that book. We continued establishment of our team in Design and manufacturing the Pelton wheel for one year and a new boss took over our department with M.Sc. degree from UK in just Turbo-machinery [He is now a professor at University of Technology in Sydney-Dr Madadnia]. So I decided to move to another research centre, but still under Ministry of Power.

This New Research Centre was called **Centre for Renewable Energy Research**. The Mechanical Engineering branch of that centre was directed by Dr Ezatullah Azad. He interviewed me and Dr Salehi who was our VC at Sharif University of technology, he was also working as assistant to Minister for Power. He was my referee for that position. I started my work in Centre for Renewable Energy under supervision of Dr E. Azad. My research included writing a research report for the three Solar Energy Collectors for Air Heating.

I compared the three different profiles in those solar collectors for energy efficiency. My report in Persian language exists, which is **my firs written research book** in my name. Dr E. Azad wrote a referee letter for me, signed it on the proper Ministry of Power - Atomic Energy Organisation - Centre for Renewable Energy documents. You can see the document in my “Referee report” file which is attached.

I wrote a letter to Dr Salehi [Assistant Minister of Power-VC of Sharif University of Technology] explaining why Iran needs New Turbines manufactured in Iran, not in overseas. He agreed but with variation of his opinion. Dr Salehi invited me to his office at Ministry of Power and I started working on "**Methods of Exploitation of Power from Iranian Waters"** new research. I was working in the seminar big room of Dr Salehi in Ministry of Power, just reporting to him. The outcome of that research is available and is **a small book on this "Methods of Exploitation of Power from Iranian Waters" which I wrote alone.** Then Dr Salehi wrote a referee report for my two praised work "3 **Solar air heater collectors**" and "**Methods of Exploitation of Power from Iranian Waters**" and you see it in file “Referee reports” and “Research Capabilities link in - Afsaneh’s Portfolio links file” attached.

Due to three research works already completed successfully, a new research centre called "Iranian Research Organization for Science and Technology [IROST]" directed by Dr Rahim Pourabdolrahim lecturer of Tehran University in Machine Design employed me to start my work on "writing a long 1500 lines computer program for design and manufacturing of Standard Gear Boxes". Dr Jahangir Rastegar and Dr Pirooz Deravi also worked in our team, but they supervised other students. I used to go to my Sharif University of Technology for running my computer program on **Standard Gear boxes**, as each new subroutine I wrote, required debugging. Dr Pourabdolrahim had given me a German Book to translate in Persian partly for my research in Gear Boxes. **I wrote 11 reports of Standard Gear Boxes and my 1500 line computer program reports are available**. Dr R. Pourabdolrahim then wrote a referee letter for praise of that research work, which is in “Referee Reports” and in “Research Capabilities link in – Afsaneh’s Portfolio link file” attached.

After I worked 2.5 years full time [12 hours/day, 6 days/week] in 4 research Centres [**Water Turbine**, **Power Ministry** (Iranian waters Power), **Centre for Renewable Energy**, Iranian Research Organization for Science and Technology (**IROST**)], All Iranian Universities, which were shut down by Republicans, were opened. I went to my University to complete my last semester to graduate from Mechanical Engineering.

I was surprised that the university has extended the requirement for my bachelor degree. One full time year was added to my study, similar to Australian B.Sc. degree with double major in Machine Design in Australia. Therefore instead of 140 units, I graduated with 155 units and instead of 4 full time years, I graduated with 5.5 years full time study. The extended 15 units, which I studied in my last year of B.Sc. were mainly to make me specialised in Machine Design. On February 1984 I graduated with "B.Sc. degree in Mechanical Engineering - Solids Design".

My work at **IROST** on writing a computer program for Standard Gear boxes was accepted as a unit called "**Project**" written on my grades transcript for B.Sc. degree with grade: 75%. Dr Qadiry Zare`a was my lecturer for the unit: **Project,** who consulted with my Research supervisor at IROST [Dr R. Pourabdolrahim] and my grade for that project was recorded. However for Project unit usually students worked in industry in their last year for only 3 months to graduate with some industry exposure, my research at IROST took **1.5 years [full time, 6 days/week, and 12 hours/day]. Therefore by the time my B.Sc. degree finished I had a double major degree in “Mechanical Engineering-CAE”. With 2.5 years full time research experience in Water Turbines, Solar Air Heaters, Gear Boxes, Computational Mechanics.**

**About my M.Sc. Degree course [1985-1988]**

Quickly after graduation from B.Sc. I succeeded in exam entry for M.Sc. course in one of the top 5 Iranian Universities in Shiraz [City of Persepolis]-Iran. I started my M.Sc. degree course in 1985 and studied 2 years course work mainly in Aerospace and advanced Fluid Mechanics and 1.5 years research work with a book of 320 pages thesis which was defended and examined. My research in M.Sc. was to write a long **2820 lines computer program about Flight Vehicles**, it was about reading over many NASA Data books, understanding the **aerodynamic computations** in those thick books and converting the calculations to a code for calculation of the path of flight vehicles in the air for **accurate controlled flight with minimum error**. That research was successfully completed by myself supervised by my M.Sc. supervisor **Dr Mohammad Mehdi Alishahi [graduate of USA-MIT**] and **Head of the department of Mechanical Engineering**. The 320 pp book written by me is available for you to see and the **abstract of my M.Sc. thesis** is in my "Afsaneh's Portfolio links" document, attached. There is a **video of myself** on home page of my **ewindfly website** in which I talk about this email and you can see me showing my M.Sc. thesis book. This video was recorded in 2013, when I was working self employed as a landlord, supervising my tenants in **home based projects such as installing a gable carport for installation of a wind turbine on its ridge and a charging station for AEV Car in future.** I and my tenants not only completed and installed this project but mastered ourselves in working with Mitre Saw and Table Saw and all outside equipment, which we used in 80 home based projects in our home built mechanical workshop [see slide shows in my ewindfly website home page].

**About my Deferred PhD Course [1990-1994]**

I immigrated to Australia with **Permanent Residency Visa** given to me at Australian Embassy in Iran in Aug 1988.

My work in Australia as a married female engineer had three restrictions:

1. I could only live where my husband [Australian mining engineer] could live, such as Kalgoorlie, Perth, Pannawonica and Leinster.
2. Since my ex-husband worked 12 hours/day and sometimes FIFO, I was the main care giver for future 3 children we had during [1989-2003]
3. Due to my ex-husband’s very high salary, there was no funding for my child care for three children from government. Also we paid about 47% tax on his salary, as well as mortgage for a house purchased in Perth in 1995.

After working full time for a month at **Mintrex Consulting engineers** in Kalgoorlie, the morning sickness felt as a result of pregnancy made me to change my job to just casual tutor at Curtin University – School of Mines in Karlgoorlie, to teach Calculus to University students in Surveying.

We moved to Perth [me, my husband and the new baby we had] and I enrolled in Murdoch University in Feb. 1990 starting working on a PhD Proposal in Optimum Design and construction of a 5 KW residential Wind Turbine for Remote Areas. After 6 months I decided the research in Wind Turbine is finished 96% globally and researchers suggested research in Flywheel Energy Storage Systems. I chose that topic for my research in PhD and continued with **Optimum Design and Construction of a Flywheel Energy Storage System with Fibreglass material to store energy from the Wind Turbine.**

I worked as a casual tutor at Murdoch University teaching Physics Lab., Introduction to Mathematics and Physics under supervision of the Head of the department of Physics Prof. Philip Jennings. I and Prof. Jennings both were enthusiastic in the two research topics: Wind Turbine and Flywheel Energy Storage System during the entire time I studied PhD under supervision of Prof. Jennings. Then I moved to two mining town in Feb. 1992. I continued my PhD study with external mode living in Pannawonica and Leinster until August 1995 nearly 4 years.

My PhD could not be completed after Oct 1994, as I was in remote area and had to take rest for a fatal risk, third Caesarean, which needed relocation to Perth in 6 months to the private Kings Edwards hospital by Aeroplane. University policy did not allow second suspension. Withdraw was my only choice, so I chose that option to re-enrol when my medical condition after caesarean operation was good.

Someone else enrolled in vacancy, which was created and my PhD supervisor was no longer available due to his high academic supervision load and being the head of Physics department in 1996. Then when I was ready to start my PhD, he retired in 2012. However he supervised my research in Flywheel Energy Storage System informally for 6 months. Also I worked under Supervision of Prof. James Trevelyan at UWA for 6 months informally. No academic in Perth was qualified and experienced in the field of my PhD to work as my PhD Supervisor, during 1996-2017. Prof. Jennings was retired as well.

I continued my study with 6 courses in higher education in **AutoCAD, SolidWorks, TurboCAD, Education, Project Management Practice, English [TESOL]** after deferral of my PhD course so far. Since my parental duties are finished with graduation of my 3 children from their universities and they all left home for professional working, I decided to start my PhD course and research work with too much flexibility and even move overseas, if Australian universities do not re-enrol me. My next country would be Canada or New Zealand.

I hope Australian Universities acknowledge and allow adjustment for my study gap spent on **delivering a child by hard Caesarean, relevant study**, Engineering tutoring, raising three kids and home renovation by myself with 5 owner builder building licences. I am not referring to my "construction management" experiences in this application and have not referred to it in my resume in details.

Attached are the following documents:

1. Afsaneh's Portfolio Links

2. Covering Letter - PhD Supervisor

3. Referee-Reports

4. Referees

5. Academic Referee Report1-Dr Pourabdolrahim

6. Assessment Advice-OQU-1216-3846

7. 19045961\_Confirmation\_Letter\_PhD.PDF

8. Graduate Certificate in TESOL

9. WA Qualification Table

For all my virtual transcripts [B.Sc. Book, M.Sc. Book, PhD Book, resume, academic records, Research Capabilities, M.Sc. thesis Abstract, My extra academic transcripts for courses completed or in-completed in Australia] please just refer to my "**Afsaneh's Portfolio**" web page. I would appreciate your welcome to me for an interview to be able to personally present myself.

Yours Faithfully

**Afsaneh Cooper [Motamedi]**