

**BMW GROUP + QUT
DESIGN ACADEMY**

FEBRUARY 2021

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NEWSLETTER

**BMW
GROUP**



WELCOME



2021 has started off incredibly well for our partnership with BMW Group. Not only have we begun to detail several large project collaborations that will keep us busy for the next two years, we have also confirmed a very exciting surprise for this year. We also welcomed back and debriefed some of our student interns who were in Munich during 2020. They were working on very significant projects for BMW Group and we look forward to continuing on with some of these throughout the year here through our Special Projects Program.

It's exciting to once again be launching the WIL projects through our Internships Programs for semester 1, 2021. We have an amazing real world project with BMW Group that will focus on driver and passenger experience, and has the potential to be deployed. Further, this year we have also launched several projects through Impact Lab 4, part of the interdisciplinary subjects in the Bachelor of Design undergraduate program. It will be exciting to be involved in both of these projects in the first half of this year.

We are once again in the news with a story from QUT media about our amazing interns and their special role in helping launch idealworks, the newest BMW Group subsidiary company. Click on the link [here](#) or go to our news section on our website for more information.

Finally make sure you read our feature article by James Dwyer, our Research Associate conducting his MPhil at the Academy. He has written a little bit about human-robots interactions and the potential opportunity for exploration that he is conducting research on.

All the best,

Dr Rafael Gomez
Founder & Academy Lead

PROGRAMS



INTERNSHIPS

The Internship program focuses on Fostering Design Excellence. It offers high-performing QUT design students an opportunity to advance their learning through real-world projects, and provides a pathway for paid internship placements at BMW Group in Munich, Germany.

Semester 1 WIL Internships

With confirmation of a bespoke, real-world project offered and supported by colleagues at BMW Group, we opened up applications for Semester 1 WIL internships at the start of the month. The project is Graphics and UI/UX focused, so this internship has been offered to students from Industrial, Interactive and also Visual Communication Design courses. In the next issue of our Newsletter we will be able provide an update on the students confirmed for our Internship program.

Impact Lab 4

This semester we are also offering a small number of design projects for up to six students completing the Impact Lab 4 unit to choose from. While not an internship, these selected students will be supported by Academy staff during scheduled consultations. Our next Newsletter will also contain an update on the students who will be completing the Academy projects for Impact Lab 4.

RESEARCH

The Research program centers on Exploring Knowledge Horizons. We have initiated a progressive research agenda for PhD and MPhil students to conduct world-class research through the Academy.

As the year begins we are excited to develop and continue to work with BMW Group on projects focused on human-robot interactions and the potential opportunities that this research area affords from a design perspective. Our Research Associate James Dwyer continues to conduct initial research in this area and he has written our feature article this month outlining the initial stages of his research agenda. We are excited about the future prospects of this research and look forward to the next stages of this interesting and fruitful research area.

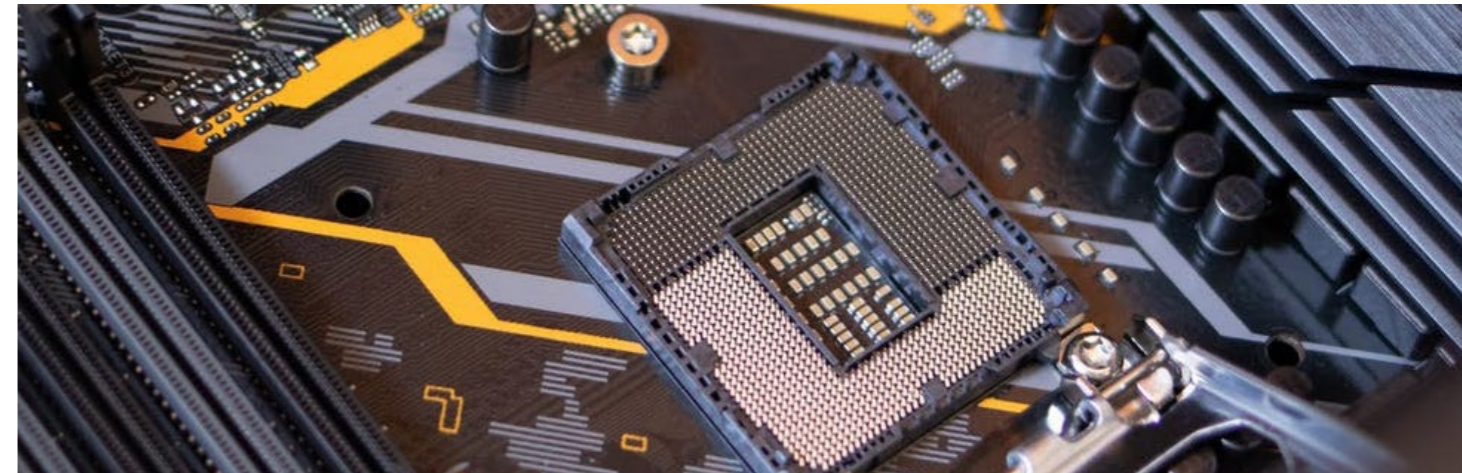
SPECIAL PROJECTS

The Special Projects program pioneers world-first projects by Advancing Cutting-Edge Technologies. It is tailored for professional design graduates to work on advanced R+D projects for real-world applications. These projects are established by BMW Group in Munich and are supported by the Special Projects team at the academy.

New Design Associates

While new work for BMW Group is being finalised for the year ahead, we are preparing by making plans to add two new Design Associates to the team. They will work part-time alongside Jordan Domjahn (Design Associate + Special Projects Lead) in the Academy office and support BMW Group. Part of the plan includes updating and improving our equipment, including adding some high-end computers as part of our inventory.

FEATURE



THE FUTURE OF HUMAN-ROBOTIC INTERFACE

James Dwyer
Research Associate (MPhil)

This month's feature will be an exploration of human-robot interaction (HRI), including the evolution of HRI and the potential innovations stemming from human-robot collaboration (HRC) research. It will outline the current landscape and the potential for future developments, particularly as it applies to Industry 4.0; factories, manufacturing and logistics.

HRI is a broad field encompassing nearly all situations in which humans and robots interact. This field sits at the intersection of psychology, cognitive science, social sciences, artificial intelligence, computer science, robotics, engineering and human-computer interaction. HRC is a subset of HRI research which focuses more specifically on collaborative processes between human and robot agents. This research explores how humans and robots can better work together to achieve shared goals. Many new applications for robots in factory spaces require them to work alongside people as members of human-robot teams. One of the biggest drivers for this shift has been the automotive industry. The early stages of robotics use in factory spaces meant robots working "alongside" humans separated by physical barriers such as cages. As this field develops however, we see greater direct interaction between humans and robotic agents. This development introduces numerous challenges to researchers and developers, such as collision detection and avoidance, and human-robot communication systems that facilitate understanding shared goals and intentions. These advances have also introduced new physical and mental health risks to human operators as they try to navigate this new landscape.

A recent area of interest is how social robotics frameworks and principles can be applied to HRI within manufacturing and logistics contexts. Social robotics research to date has primarily focused on domestic and medical applications and looks to find ways to establish “relationships” between humans and robots through the detection and synthesis of emotional and social information; social cues, facial expression, body language and natural speech. Some examples of social robotics application to commercial and industrial robotics are the Baxter Robot and Rollin’ Justin. These robots utilise anthropomorphic principles in their design to allow the robot to communicate in ways which are more “human”.

For the Baxter robot specifically, this has led to a large body of research exploring the efficiency of collaboration and operators’ user-experience. Research in this space has provided strong evidence that robots that can communicate social information improve operator trust, enjoyment, and collaboration efficiency. However, these robots are limited in their applications and functionality within factory spaces compared to the average factory robots, which commonly do not have anything close to a humanoid form. This represents a gap in research, “How can social robotics principles be applied to non-humanoid robots?” and “Do the benefits of emotional and social information seen within research transfer to these non-humanoid factory robots?”.

These are some of the questions being explored at BMW + QUT Design Academy as part of the MPhil research program. The hope is to identify and validate new forms of human-robot interactions by exploring this research gap. There is potential within this research to generate more natural communication and feedback systems for non-humanoid robots that allow for richer forms of collaboration and elevate robotic systems from tools to “co-workers”. The benefits of such discoveries would extend beyond the automotive industry and factory workers. They could benefit the design and development of human-robot interactions in domestic, commercial and medical fields.

Banner Image sourced via:
<https://www.pexels.com/photo/black-and-gray-motherboard-2582937/>

BRIEFINGS



ACHIEVEMENTS

- February 2020 Photobook completed and printed
- February Applications opened for Semester 1 WIL Internships
- February Application and selection process for Semester 1 WIL Interns started
- March Application and selection process for Impact Lab 4 (Semester 1) students started

BMW GROUP PARTNER UPDATE

We have been in close consultation with our BMW Group colleagues and have drafted a plan for a variety of exciting and large scale projects for 2021 and 2022 through our Special Projects Program. Once we have finished detailing these we will be ready to expand our team at the Academy and employ more designers on these exciting projects. Further, we have reached out to some university partners in the UK to work together on some of these projects. We will be announcing further details on these exciting future-focused projects soon, suffice to say the project outcomes have implications for the future of work and manufacturing at BMW Group.

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