**FACULTY OF COMPUTING ENGINEERING & BUILT ENVIRONMENT  
SCHOOL OF COMPUTING AND DIGITAL TECHNOLOGY**

**CMP7200 – INDIVIDUAL MASTERS PROJECT - REGISTRATION FORM**

Please ensure you have completed your Ethics Approval submission at <https://bcu.forms.ethicalreviewmanager.com/Account/Login>

When you have completed this Registration Form please upload it to MOODLE by the deadline given.

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| Student ID: |  |
| First Name: |  |
| Surname: |  |
| Course: |  |
| Proposed Supervisor | Iain Rice |

1. **PROPOSED TITLE:** Artificial approaches to help in the fight against COVID-19
2. **RESEARCH QUESTION:** How to tackle large amounts of data while harnessing all the useful information from it?
3. **AIM(S):** To provide valuable insights and predictions regarding COVID-19 patient numbers, countries that are affected and the virus spreading pattern and trend.
4. **OBJECTIVES:**
   1. Proposal
   2. Data Pre-processing
   3. Data visualization
   4. Machine Learning Models
   5. Performance Metrics
   6. Comparison
   7. Dissertation Report
5. **MAIN RESEARCH PHILOSOPHY/METHODOLOGY/METHODS:**
   1. **Data:** The dataset would be from the [Roche Data Science Coalition](https://www.kaggle.com/roche-data-science-coalition/uncover). They have been collecting COVID-19 related datasets from large organizations all over the world and compiling it into a single collection. This will be the fuel for the project.
   2. **Data Visualization:** The data will then be analysed using statistical and graphical methods to analyse trends, inherent biases and anomalies to better understand the strategies needed to handle them. Correlation matrices and techniques similar to these would be employed in the regressive sense to understand the cohesion between the features in the dataset with respect to the labels. Trend analysis and a complete dive into the way the data changes with time will be displayed to capture the essence of the spread of the virus.
   3. **Machine Learning Models:** The problem is widely scoped and has a lot of data of every kind to be digested and deducted. Therefore, multiple approaches would be used to handle multiple datasets as per requisite and the final results will be compiled to give an overall meaningful picture for the masses.
6. **REASONS FOR CHOOSING PROJECT TITLE:** This gives me an immense opportunity to learn heavily about the methods and algorithms in Machine Learning that are undermined and are treated as underdogs while gaining significant insight in the differences between the state-of-the-art and the novel approach. I would also love to pursue a career in Machine Learning in the future and this would help a lot.
7. **BIBLIOGRAPHY / REFERENCES (Harvard format)**
   1. Bernardino, F., Alencastro, L., Silva, R., Ribeiro, A., Castilho, G. and Gaíva, M., 2021. Epidemiological profile of children and adolescents with COVID-19: a scoping review. *Revista Brasileira de Enfermagem*, 74(suppl 1).
   2. Hendra, H., Vajgel, G., Antonelou, M., Neradova, A., Manson, B., Clark, S., Kostakis, I., Caplin, B. and Salama, A., 2021. Identifying prognostic risk factors for poor outcome following COVID-19 disease among in-centre haemodialysis patients: role of inflammation and frailty. *Journal of Nephrology*.
   3. Khan, S. and Goh, S., 2021. The impact of COVID-19 pandemic on breast cancer treatment. *European Journal of Surgical Oncology*, 47(2), p.e33.
   4. Nasiri, K. and Dimitrova, A., 2021. Comparing Saliva and Nasopharyngeal Swab Specimens in the Detection of COVID-19: A Systematic Review and Meta-Analysis. *Journal of Dental Sciences*.
   5. Romanzi, A., Adorni, A., Boleso, N., De Rango, S., Di Palma, G., Gabaglio, M., Galletti, M., Giacci, F., Macchi, L., Moroni, R., Putortì, A., Rongoni, E., Rossi, F., Scolaro, R., Taiana, C., Trevisan, D., Zaccarelli, A., Zanardo, M., Zucchi, D. and Vannelli, A., 2021. Caring for fragile patients with rectal cancer during the COVID-19 pandemic: an Italian single-center experience. *European Journal of Surgical Oncology*, 47(2), pp.e48-e49.