**Detail interview questions:**

1. What do you do to verify that your work is accurate?

I usually check my results against the literature and other people work to ensure that I have results in the range of others. For example, If I develop a mathematical model of a battery, I check the model accuracy against the available experimental data or other mathematical models in the literature to make sure that I have the result in the range of other people’s work.

2. Describe a time you made an error. Why did you miss the mistake? How did you handle the situation?

Once I was preparing a proposal and my supervisor asked to prepare a new proposal for OCE similar to a previous NSERC, just add our recent progress to the results and adjust the budget. At that point, I was unsure about the duration of the project, and did not check the guideline carefully about the duration and make it 3 years similar to the previous NSERC. When I finish the proposal, he told me that the maximum duration allowed is two years for OCE not 3 years. I modified the tasks according to duration, redo the budgeting, and corrected my mistakes. The lesson I learned was that do not assume that all the projects are similar and pay attention to all details by reading guidelines and all the available information before start.

(**Analytical skills** refer to the ability to collect and analyze information, problem-solve, and make decisions.)

4. Can you describe a project that demonstrated your analytical skills?

I developed a model to predict the capability of repaying a loan by an applicant. First, I analyzed the customer journey and how they behave with their previous loans, were there any delinquency or have they been defaulted? Since it is possible such a behaviour be repeated again. On the other hand, if they had had difficulty to repay a loan before, was it just once and or a common trait of the customer? How was the customer repaying behaviour in the most recent loan? Based on these concepts, I developed relevant features to help my machine learning model, classify the defaulted applicant to avoid the damage to the business.

5. Can you tell me about a time when you had to analyze information? Why were you analyzing the information? What was your process?

I was developing a predictive model for the lithium-ion battery capacity and I received the experimental battery data from a colleague. I had to analyze the data before use it. I checked the accuracy of the battery voltage and capacity against the nominal values to make sure they are in the acceptable range. Then, I cross-checked the reliability of data with the similar battery that another colleague had worked on. Then, I became sure that the data is valid and can be used to develop predictive model. Without analyzing and checking accuracy, validity and reliability of data, I never start building model. This results in a waste of time and company resources.

**(Decision Making)**

8. What steps do you take before making a decision?

First, I gather all the relevant information to make sure that we have not missed any details or available solutions for the problem. Then, I identify all the alternative solutions and how they can be applied to our problem. Then, I choose one alternative according to its performance, time, resources available. Before taking action, I review my decision and its consequences to make sure that it is a good decision. For example, in the credit approval, first we need to get the applicant historical financial data, such as previous credit history, loans, etc. then we need to check the methods we want to use to assess the applicant capability of repaying the loan. What model or algorithms to use? What metric we want to use to check model accuracy? The weigh different alternatives model and choose the most robust model. Since the risk of harming the business is high due to loaning to a defaulted person, we need to be cautions, use conservative metrics, and review our method thoroughly before taking action.

9. Can you talk about a time you had to make a decision with limited information? How did you determine what would be the best decision?

I had to interview couple of candidates to hire a new Ph.D. student. That was through skype which made it harder to assess. Before interview, I gathered all the information for each candidate online, their published papers, their GPA, university, the project that they had worked on in their master. Then, I asked relevant questions about their project and knowledge, after that I weigh different candidates based on their answer to questions and their relevant experience to our research project. After first round, I chose two of the best and reviewed my supervisor expectation with them and listened to their feedback and their future career goals. Finally, I determined the best candidate based on their two interview and the criteria that were mentioned.

**(Leadership interview)**

16. Can you describe a time when you were in charge of a project? What would you do differently?

When I am in charge of a project, first, I prepare the project plan with the tasks, timelines and the person responsible for each task. Then, I make sure that each person clearly know what is the expected milestones, who they should work with and if they have a question or challenge who they need to contact? I would check the flow and sequence of the tasks regularly and prove feedback to my coworkers. It is very important to always have big picture of the project and timeline in my mind to lead the project to the final milestones.

17. Can you talk about a time when a project didn’t have a leader, but you took charge? Why did you take charge? What did you do?

We were developing a battery model for lithium-ion battery. Two friends of my mine were doing the experiment and I was responsible for developing the model. I felt that the project is not progressing as expected pace due to lack of leadership. I arrange the meeting with two colleagues and express my concern. I suggested that they share their preliminary performance data with me, then I can start to develop my model based on their data and when their material development and experimental phase was finalized, I can recalibrate the model according to new data. I learned that it is crucial to take charge to accelerate the project progress to achieve the objectives faster with higher efficiency.

**(Taking initiative)**

24. Can you describe a time when you saw a problem at work and created a solution for it.

Me and two of my colleagues were responsible to prepare a research proposal. There are many required documents for the proposal to be completed and we were informed about the proposal one week before the deadline of university. Everyone of us was focused on completing the forms, however, the most important part for the successful approval of the research proposal is the idea and novelty of the work. This needs to be clearly detailed and explained. I talked to my supervisor and convince him that we need to focus more on the research ideas, novelties, and objectives, rather than many supporting documents in the short time available. With this we increase the chance of success, then we can submit the supporting documents shortly after submission which was acceptable. My supervisor appreciated my comment and agreed. This improved the quality of our proposal and led to more approval.

25. Can you tell me about a time you made a change at work?

Me and two of my colleagues were responsible to prepare a research proposal. There are many required documents for the proposal to be completed and we were informed about the proposal one week before the deadline of university. Everyone of us was focused on completing the forms, not paying attention to the most crucial part which is new research ideas and novelties. I talked to my supervisor and convince him that we need to focus more on the research ideas, novelties, and objectives, rather than just make it complete in the short time available. With this we increase the chance of proposal approval, then we can submit the supporting documents shortly after submission which was acceptable. My supervisor appreciated agreed and focused more on research ideas, the proposal was eventually approved. I learned from that experience that it is necessary to express my idea in order to improve the quality of our work and higher efficiency of the projects.

**(Goal setting)**

30. Can you talk about a career goal you made? Did you reach it? What obstacles did you encounter?

I set to goal to get my Ph.D. in chemical engineering and got it two years ago. The most challenging part was to get admission from university of Waterloo, I had to take English test, learn electrochemistry and publish a paper in the field of battery to be competitive in the admission process. What I learn from the process was that you need a set a goal and take gradual step towards it and do not get disappointed if you face challenges or rejection and always focus on your dream until you achieve it.

29. Can you describe the process you use to set personal goals?

For example, if I want to learn a new skill such as a new software, first, I evaluate different levels of proficiency of that software and what level I need to reach for my work. Then, I set the target and estimate the required time to accomplish it. Then, I make a plan including required study hours for everyday. Therefore, I set a target and stick to daily plan which results in an incremental progress towards that target everyday. The plan should be reasonable, not very easy and not impossible to challenge me everyday to improve my skill and achieve my goal.

33-44 customer service and sale related questions are irrelevant.

45. Can you tell me about how you communicated with your previous bosses?

We had weekly meeting with my supervisor for reviewing the previous week research progress and future work. I always listened carefully to his comments on my work since he provided constructive feedback on my work and provided new direction which benefited the overall research. If I had a suggestion or an idea, I clearly express it and provided the supporting papers in the literature and reasons for my idea. Then, he provided his feedback on my idea. Sometimes other people in our group have had that idea and he inform me about which save our time, sometimes he encouraged me to try the idea and see the results. Eventually, I followed his lead on the research project after our discussion.

46. Can you tell me about a time when you communicated with a person you didn’t like?

I was guiding a student on a modeling project and we needed to prepare the result in two months. Although the student made efforts on tasks, it was not enough to achieve project objectives in two months. On the other hand, he was difficult to communicate and ignored my emails and did not pay attention to my comments on focusing on the certain area and followed his intuitions. I decided to talk to him directly and explained to him the timeline and the necessity of focusing on certain area and he needs to follow my direction. When he listened to my logic, understood that I respect his talent and effort but he needs to follow my lead to accomplish the project in time. This serious talk significantly improved our communication. I learned that it is necessary to have difficult talk to settle the conflict.

**Interview questions about interpersonal skills**

53. Can you describe a time when you had a conflict with someone at work? What did you do?

I have been given a task to prepare a research proposal. There were many required documents to be completed and I was informed about the proposal one week before the deadline. We had a very big research group of 70 people and my supervisor was extremely busy with supervising students, teaching, or he might be informed lately by a new source of funding at last minute. First, I became stressed from my supervisor given task and thought that it was impossible to finish the whole proposal in a week, and even if we finish it wouldn’t have a high quality and will be rejected. Then, I start to think instead of focusing on filling all the forms and supporting documents, it’s better to focus on the main proposal, research ideas and novelties and submit it. We could ask university for extra time to submit the supporting documents. I talked to my supervisor about it and we sent a letter to university and asked for permission and they agreed. I learned from this experience was that instead of become anxious with my supervisor decision, think more and check other alternatives solution to address the situation.

54. Can you describe a time when you dealt with a co-worker you didn’t like?

I was supervising a co-worker on a modeling project and we needed to prepare the result in two months. Although the student made efforts on tasks, it was not enough to achieve project objectives in two months. On the other hand, he was difficult to communicate and ignored my emails and did not pay attention to my comments on focusing on the certain area and followed his intuitions. I decided to talk to him directly and explained to him the timeline and the necessity of focusing on certain area and he needs to follow my direction. When he listened to my logic, understood that I respect his talent and effort but he needs to follow my lead to accomplish the project in time. This serious talk significantly improved our communication. I learned that it is necessary to have difficult talk to settle the conflict.

55. Can you tell me how you communicate with someone who doesn’t like you?

First I start with myself and think about if the reason is that I have been hyper-competitive and I also get feedback from some of my colleagues and if there are reasons, I try to fix it. If there are no reason, I will accept that not everybody likes me and if we need to work on a project together, avoid confronting him or her attitudes. I will focus on the task and avoid negative thought about that person and try to make it work to the end of the project.

**Interview questions about teamwork**

59. What role do you normally take on a team? Why?

I am mostly doing planning in a team, I would like to gather all the required information and look for the best way to accomplish the project goal. I think this could save a lot of time and resources and avoid solving a problem that has already been solved by others that we can simply use their solution. On the other hand, I am aware that not every details can be seen in advance and not all the problems are the same. Therefore, we should not spend too much time on planning and act quickly when it is necessary.

60. Can you tell me about your most recent experience working with a team? What was your role? How did you interact with the other team members?

We were preparing a research proposal with two colleagues and my role was making plan in the team alongside preparing the modeling part documents. I gathered all the required resources, set the project objectives, and assign different tasks. But, before staring the project, we discuss the project objectives and brain stormed about our targets. Then, we assess the tasks, are they feasible in the defined period? I listened to other members carefully and modify the tasks and milestones accordingly before starting to work.

**Time management interview questions**

68. When you schedule out the work you need to do, how do you decide what to do first?

First, I do the task that is required and be used in the following tasks. For example, we need to gather all the information and literature about the project objectives before doing it. If we start doing a task without information, chances are we waste our resources or miss a simpler solution already available for that problem. Then, we need to focus on the tasks that are directly contributing to the project results, instead of doing one task completely and fully optimized.

69. Can you tell me about a project you were in charge of? How did you organize the tasks and make sure everything got done?

I was in charge of preparing a research proposal with 2 colleagues, first, I prepare the project objectives, tasks, timelines, milestones, and the person responsible for each task. Then, I make sure that each person clearly know what is the expected milestones, who they should work with and if they have a question or challenge who they need to contact for the guidance? To make sure everything got done, I regularly check the flow and sequence of the tasks and prove feedback to my coworkers. It is very important to always have big picture of the project and timeline in my mind to lead the project to the final milestones and never missed the deadline.

**Interview questions about handling stress**

73. Can you describe a stressful work situation you experienced? How did you handle the situation?

I have been given a task to prepare a research proposal. There were many required documents to be completed and I was informed about the proposal one week before the deadline. We had a very big research group of 70 people and my supervisor was extremely busy with supervising students, teaching, or he might be informed lately by a new source of funding at last minute. First, I became extremely stressed and thought that it was impossible to finish the whole proposal in a week, and even if we finish it wouldn’t have a high quality and will be rejected. Then, I start to think instead of focusing on filling all the forms and supporting documents, it’s better to focus on the main proposal, research ideas and novelties and submit it. We could ask university for extra time to submit the supporting documents. I talked to my supervisor about it and we sent a letter to university and asked for permission and they agreed. I learned from this experience was that instead of become anxious, think more and check other alternatives solution to address the situation.

74. What was your most stressful project? Why was it stressful? What did you do to manage the stress? How did the project turn out?

We were informed to prepare a research proposal with two colleagues just a week before the deadline. There are many supporting documents in addition to the research proposal itself, that needs to be prepared. That was a really stressful situation, but I started to think that we should not let the stress affect the quality of our work. For a proposal to succeed, the most important part is the research objectives, ideas, and novelty of the ideas. I talked to my supervisor and convinced him to let us focus more on the proposal and ask for extension for the submission of the supporting documents. He agreed and we did so and eventually the proposal was approved.

**Interview questions about adaptability**

77. Can you tell me how you handled your transition between different jobs or positions in the past?

I transitioned from mechanical engineering to chemical engineering when I started my Ph.D. study. At beginning, that was quite challenging since most my colleagues had strong chemistry background which I did not have. To address it, I started to familiarize myself with all different researches they were going on in our group and look up and learn all the materials, concepts, and devices that they were talking in the meetings. I also talked to my colleagues about the project and their ideas that helped me a lot to adopt to new job. The learning curve was steep at beginning, but after a while I could relate to their ideas and started to communicate my ideas to the group. I learned from this experience to be patient and do my best to gather and learn relevant knowledge in a new job for the better transition to new working environment.

78. Can you describe a time when changes happened that you couldn’t control? How did you react?

We were working on a mathematical model development for the silicon based lithium ion batteries. The project was funded by GM, however, they stopped their battery projects in Canada and we had to stop the project. I had already developed preliminary model for silicon batteries. However, I decided to shift to regular lithium-ion batteries where funding was available. I modified my model to adopt to the physics of graphite and borrowed ideas from silicon literature that could be applicable on graphite. From that, I learn that we can borrow idea from previous project for the new one and be ready to adopt of any unforeseen change in the projects.

**Interview questions about innovation**

83. Can you describe a time when a manager asked you to come up with a creative way to complete a project? What steps did you take?

I was asked by my supervisor to apply convolutional network to the battery dataset to see how it works. At that point, I thought that we could only apply CNN to the unstructured image data. However, I started to collect information and check the literature and found that it is possible to apply CNN to the structured data. I just had to change the data structure to be similar to the image data structure to be able to use CNN. I tried it and it worked. From this experience, I learned that borrowing ideas from other fields and apply it to my problem can provide meaningful and valuable result. I always keep myself open to the application of successful method from other fields to my problems.

84. Can you tell me about a problem you solved in a unique way? What happened?

One challenging problem that we had was is it possible to use a model that already developed for one type of battery be adopted to a new type? I had read about “transfer learning” that employed an already trained model on an image dataset, can be tuned for a new sets of images. I thought that it worth to be tried and apply the method on our battery problem and it worked. From that experience, I learned that borrowing ideas from other fields and apply it to my problem can provide valuable result. I always keep myself open to the application of successful method from other fields to my problems. After that, I always keep myself open to the application of successful method from other fields to my problems.

### Interview questions about integrity

89. Can you describe a time when a co-worker or customer questioned your honesty? What did you do?

We were preparing a research paper and my co-worker told me that you are aware that our model does not improve the predictive capability compared to the previous models. Are you going to present the result as it is or change it? I told him that I am not going to manipulate the result to show that it is better than others. Our model has other values other than its predictive power; we have included new ideas, physics insight, electrode images which makes our model closer to the real battery compared to other people. We submitted the paper and it was accepted, one reviewer was aware of the situation and appreciated that we presented the result honesty and did not mislead other researchers with false results. I always hold strong to my values and do not allow the pressure affects my work integrity, the reviewer comments showed that others also appreciate my work integrity.

90. Can you tell me about a time when you followed a rule that you didn’t agree with? Why did you comply? How did you feel?

We had a rule to submit weekly report every week on the result of the previous week. It is hard that have result every week, sometimes some ideas do not work or it takes time to learn a method then apply it to our problem. I told my supervisor my thoughts on that, and he said that for the weeks that you do not have any result, summarize the study that you had had and failed idea that you have tried. This will help you to keep track of your progress and helpful for overall research. From that experience, I learned the logic behind that rule and the value of summarizing of my work and its importance for overall progress of each project.

### Resilience interview questions

95. Can you talk about a setback you had at work? What did you do?

For me failure is not meeting the expectation. Once I was preparing a proposal and my supervisor asked to prepare a new proposal for the Ontario Centre for Excellence (OCE) similar to previous NSERC proposal. You just add our recent progress and adjust the budget. At that point, I was unsure about the duration of the project, but did not ask and made it 3 years similar to the previous NSERC. When I finished preparing, he said that all OCE projects are limited to maximum of two years and he thought that I have already knew it. Then, I had to modify the proposal. From that experience, I never hesitate to ask about the unclear details to avoid future delays and mistake.

96. Describe a time you faced a problem at work? What did you do? What would you do differently?

In our research group, we had to upload 5 papers about our research per week in a shared cloud account. I saw that some colleagues just upload 5 papers without reading it and I saw many irrelevant and old papers in the folder. I talked to my supervisor about modifying the method, and suggested that it is better everyone upload a summary of the papers that he has read. He disagreed and stated that it is necessary to know which university and which journals are publishing novel work at the moment. From that experience, I learned that I did not express my point clearly and it was better to provide a summary of my work and upload it along the papers. This get my massage along the group and was more effective.