

## MIA TAYLOR Senior Research Fellow

### PROFESSIONAL SUMMARY

Innovative Senior Research Fellow with 7 years of extensive experience in leading advanced research initiatives in biomedical sciences. Expertise in designing and executing complex studies, particularly in cancer therapeutics. Committed to fostering interdisciplinary collaboration and driving impactful research that contributes to significant scientific advancements.

## 😔 WORK EXPERIENCE

#### Senior Research Fellow

Mar / 2021-OngoingToronto, ON

#### Maple Leaf Consulting

- 1. Designed an innovative algorithm for modeling crystal growth processes, addressing classical Stefan problems and supercooling dynamics.
- 2. Simulated crystallization in binary systems, integrating chemical reaction equations and electromagnetic influences on melt convection.
- 3. Developed robust finite difference schemes for solving parabolic partial differential equations with mixed derivatives.
- 4. Enhanced accuracy and reliability of software for tracking moving boundary positions during simulations.
- 5. Mapped physical regions into discrete squares to improve simulation efficiency.
- 6. Refined regularization procedures for numerically stable solutions, eliminating non-physical oscillations.
- 7. Validated approximations and stability of finite difference schemes, ensuring high-quality results.

#### Senior Research Fellow

Mar / 2018-Mar / 2021
F Seattle, WA

Silver Lake Enterprises

- Developed a mathematical model and finite difference approximation for transient crystal growth problems, addressing classical Stefan dynamics.
- 2. The model incorporates parabolic PDEs solved in curvilinear domains with unknown moving boundaries.
- 3. Equations approximated on non-orthogonal grids using conservative finite difference schemes for improved stability.
- 4. Implemented a regularization technique to ensure numerical solution stability.
- 5. Created a simulation tool for modeling various crystal growth methods, including Bridgman and Czochralski techniques.
- 6. Software components include heat transfer equations, furnace heating models, and melt flow simulations.

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# 💡 SKILLS



Led a team that developed a novel therapeutic approach for cancer treatment, resulting in a 30% increase in patient survival rates.