



AIWARE BOOTCAMP

TORONTO,
CANADA



How to cite this session?

```
@misc{Hassan2024AIwareOpening,  
author = {Ahmed E. Hassan and Gopi Krishnan Rajbahadur and Zhen Ming Jiang and Dayi Lin and Bram Adams and Ying Zhou},  
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```



Check this paper for more information about this session

```
@inproceedings{Hassan2024FSE,  
author = {Hassan, Ahmed E. and Lin, Dayi and Rajbahadur, Gopi Krishnan and Gallaba, Keheliya and Cogo, Filipe Roseiro and Chen, Boyuan and Zhang, Haoxiang and Thangarajah, Kishanthan and Oliva, Gustavo and Lin, Jiahuei (Justina) and Abdullah, Wali Mohammad and Jiang, Zhen Ming (Jack)},  
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url = {https://doi.org/10.1145/3663529.3663849},  
booktitle = {Companion Proceedings of the 32nd ACM International Conference on the Foundations of Software Engineering},  
pages = {294–305},  
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series = {FSE 2024}  
}
```





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Queen's University

Gopi Krishnan Rajbahadur
Centre For Software
Excellence, Huawei Canada

Jack Jiang
York University



Welcome!

Dayi Lin
Centre For Software
Excellence, Huawei Canada

Bram Adams
Queen's University

Ying Zou
Queen's University

Thanks to our Amazing Curriculum Committee!



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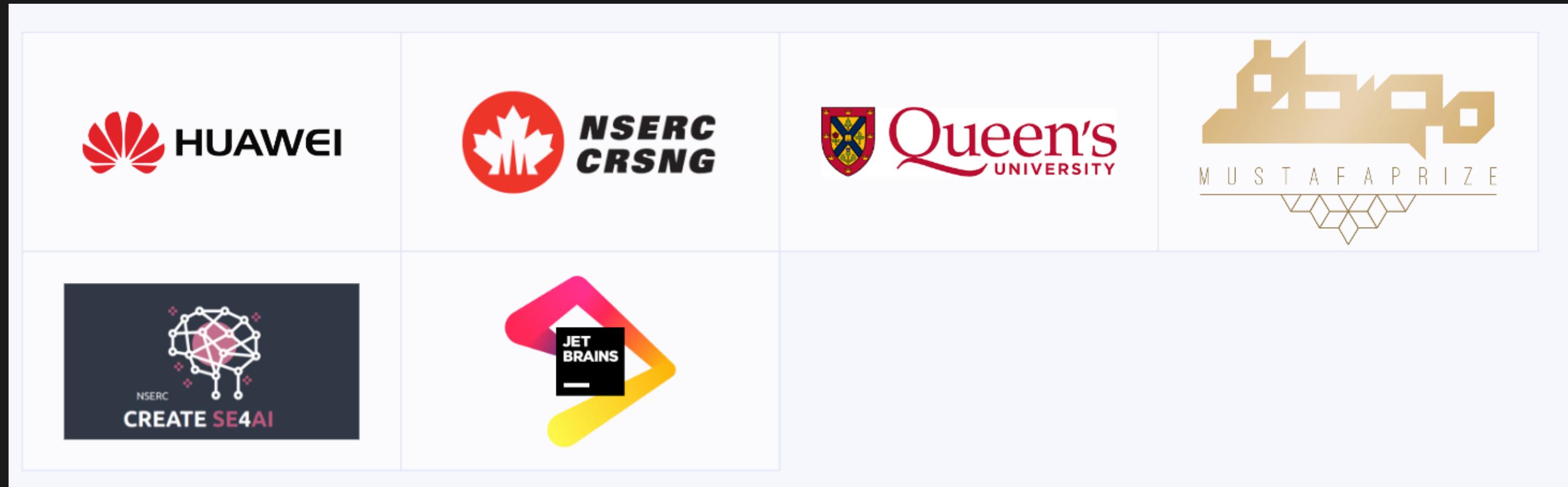
- Bram Adams, Queen's University, Canada
- Eddie Aftandilian, GitHub, USA
- Boyuan Chen, Centre for Software Excellence, Huawei, Canada
- Satish Chandra, Google, USA
- Filipe R. Cogo, Centre for Software Excellence, Huawei, Canada
- Prem Devanbu, University of California Davis, USA
- Danny Dig, University of Colorado Boulder and JetBrains Research, USA
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- Ben Rombaut, Centre for Software Excellence, Huawei, Canada
- Tom Zimmermann, Microsoft, USA
- Haoxiang Zhang, Centre for Software Excellence, Huawei, Canada
- Lingming Zhang, University of Illinois Urbana-Champaign, USA



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A Special Thanks!



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Alware – Software for all by all!



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Yoshua Bengio

“I must humbly admit that it was only this year, as I studied OpenAI’s large language model (LLM) ChatGPT and projected myself into the future, that I realized ...”

Oct 2023



Sal Khan

*“we must **fight like hell** for the positive use case .. AI can enhance HI (Human Intelligence)”*

May 2023



Yann LeCun

*“**Generative models suck!**.... LLMs have limited knowledge of the underlying reality ... Machines will eventually surpass human intelligence in all domains”*

Oct 2023



Alware – Software for all by all!



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...these workloads...just so different and new. I have been in this infrastructure business for three decades.....just really the shape of Azure is drastically changed and is changing rapidly to support of these models that you are building.”

Nov 2023



Satya
Nadella



Bill
Gates

AI is about to completely change how you use computers (and upend the software industry).

Nov 2023



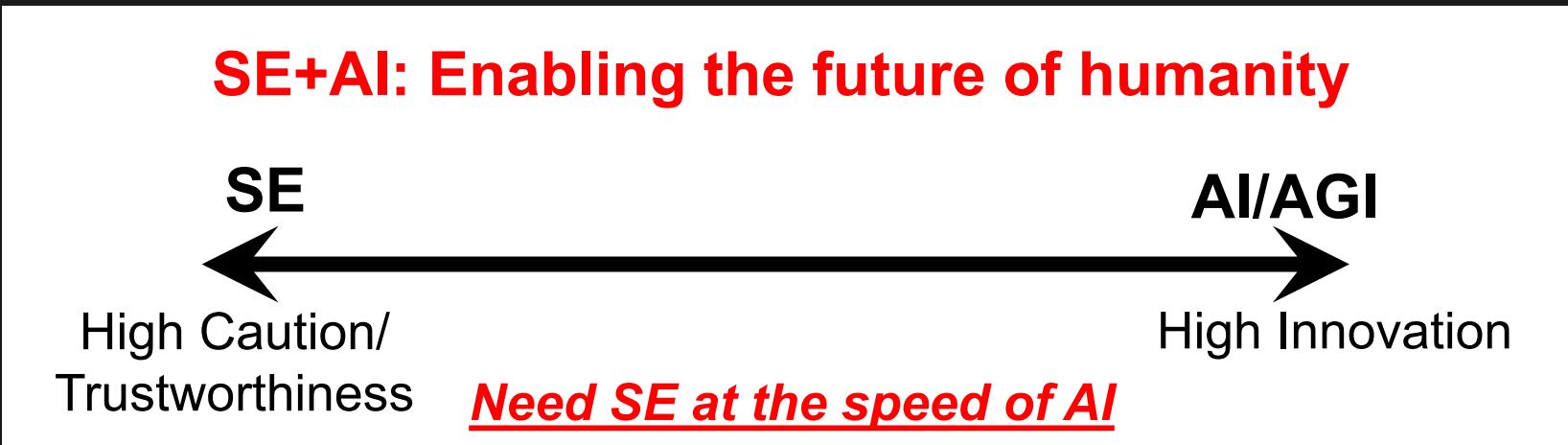
“open innovation” in the FM Era



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*...we have to continuously learn and adapt by **deploying less powerful versions** of the technology in order to minimize “one shot to get it right” scenarios
will require much more caution than society usually applies to new technologies, and more caution than many users would like.*

Feb 2023



Sam Altman



Three perspectives on SE and FMs



3+1 perspectives that involve SE and FMs

- FM for SE (FM4SE/AI4SE – Intelligent SE 2.0)
- SE for FM/AI-powered Software (SE4FMware/SE4Alware)
- SE for FM (SE4FM)
- SE for NN operators

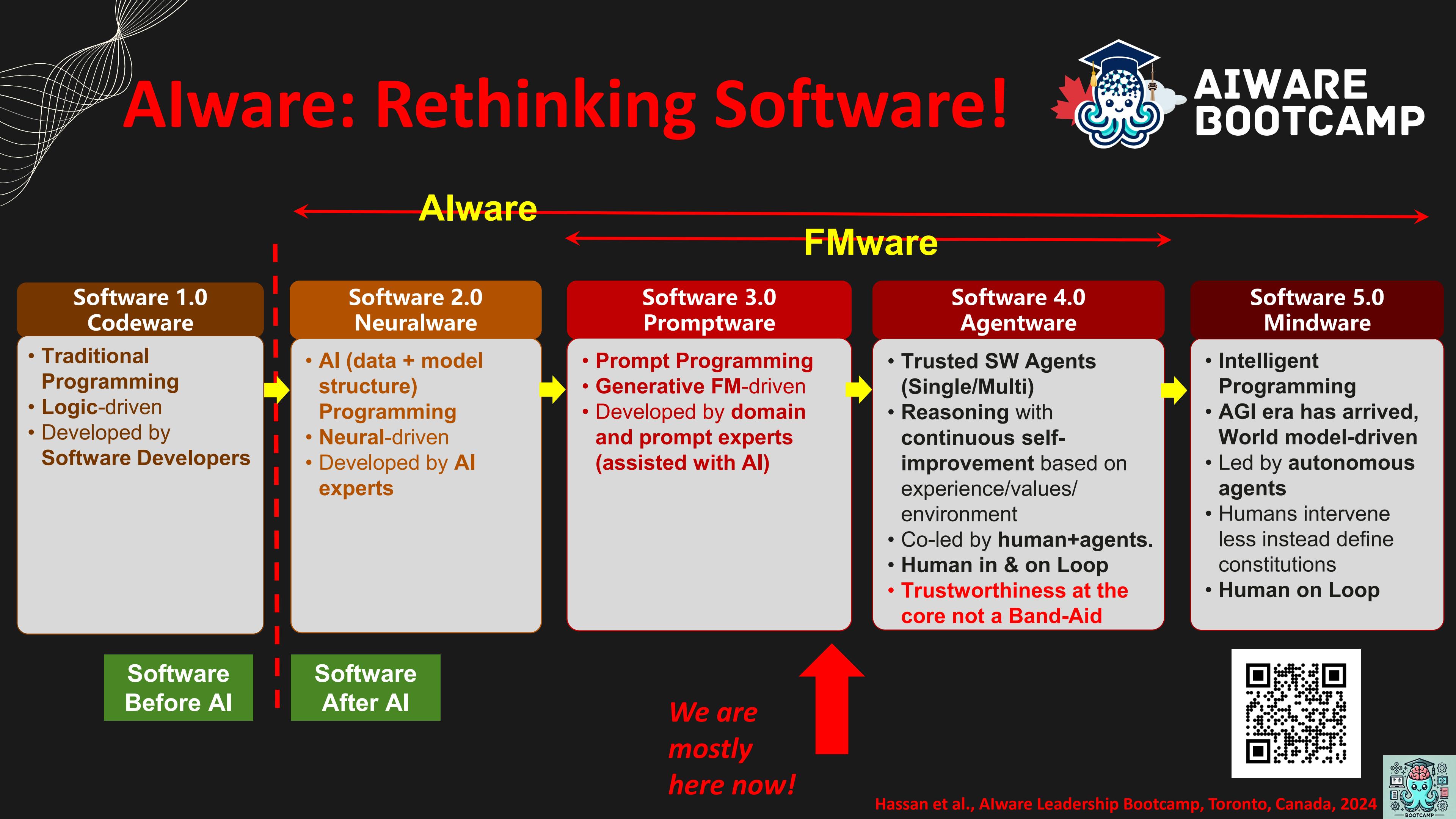
Not necessarily or easily separable as they overlap



Alware: Rethinking Software!



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Foundation Models/LLMs Change everything!

We must rethink Software, Software
Engineering, SE Innovation



AlwareConf.org

Software for all by all!



“open innovation” in the FM Era



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BigCode

They produce state of the art code FMs that outperforms larger open access code FMs

StarCoder 2 and The Stack v2: The Next Generation

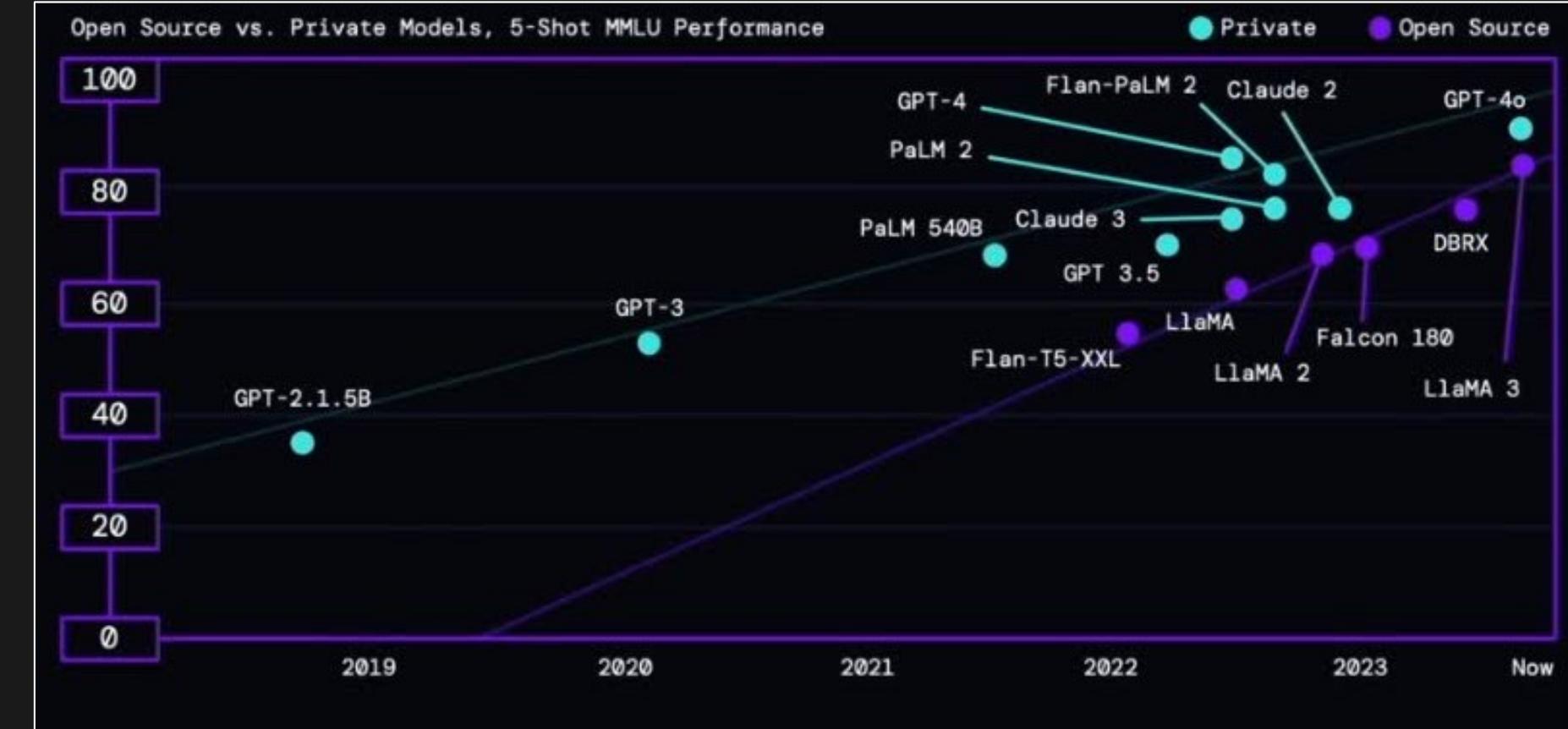
Anton Lozhkov¹ Raymond Li² Loubna Ben Allal¹ Federico Cassano⁴ Joel Lamy-Poirier² Nouamane Tazi¹ Ao Tang³ Dmytro Pykhtaa³ Jiawei Liu⁷ Yuxiang Wei⁷ Tianyang Liu²⁵ Max Tian² Denis Kocetkov² Arthur Zucker¹ Younes Belkada¹ Zijian Wang⁵ Qian Liu¹² Dmitry Abulkhanov⁷ Indranell Paul³² Zhuang Li¹⁴ Wen-Ding Li²⁰ Megan Risdal²⁴ Jia Li⁵ Jian Zhu¹⁶ Terry Yue Zhuo^{14,15} Evgenii Zheltonozhskii¹³ Nii Osae Dade²⁸ Wenhao Yu²⁰ Lucas Kraub⁵ Naman Jain²⁷ Yixuan Su¹⁰ Xuanli He²³ Manan Dey³¹ Edoardo Abati¹⁵ Yekun Chai³³ Niklas Muennighoff²⁹ Xiangru Tang³⁴ Muhtasham Oblokulov¹⁸ Christopher Akiki^{9,10} Marc Marone⁸ Chenghai Mou³ Mayank Mishra¹⁹ Alex Gu¹⁷ Bin yuan Hui⁵ Tri Dao²¹ Armel Zebaze¹ Olivier Dehaene¹ Nicolas Patry¹ Canwen Xu²⁵ Julian McAuley²⁵ Han Hu¹⁴ Torsten Scholak² Sébastien Paquet² Jennifer Robinson⁶ Carolyn Jane Anderson²² Nicolas Chapados² Mostofa Patwary³ Nima Tajbakhsh³ Yacine Jernite¹ Carlos Muñoz Ferrandis¹ Lingming Zhang⁷ Sean Hughes⁶ Thomas Wolf¹ Arjun Guha^{4,11} Leandro von Werra^{1,*} Harm de Vries^{2,*}

Supported by


 Hugging Face 

StarCoder 2 15B matches or outperforms the performance of codeLlama-34B

The training process, code and all the datasets used to create such models are openly available



We use the term
Foundation Models
Instead of LLMs

*It does NOT
make sense to order a
Small Large Latte Mocha*



Two Dinners



Sunday 7:45PM
Sushi AYCE



Tuesday 5:45PM
Indian



Daily lunches and breaks will all be outside of our room



Thursday Excursion

12:45PM meet at aquarium entrance

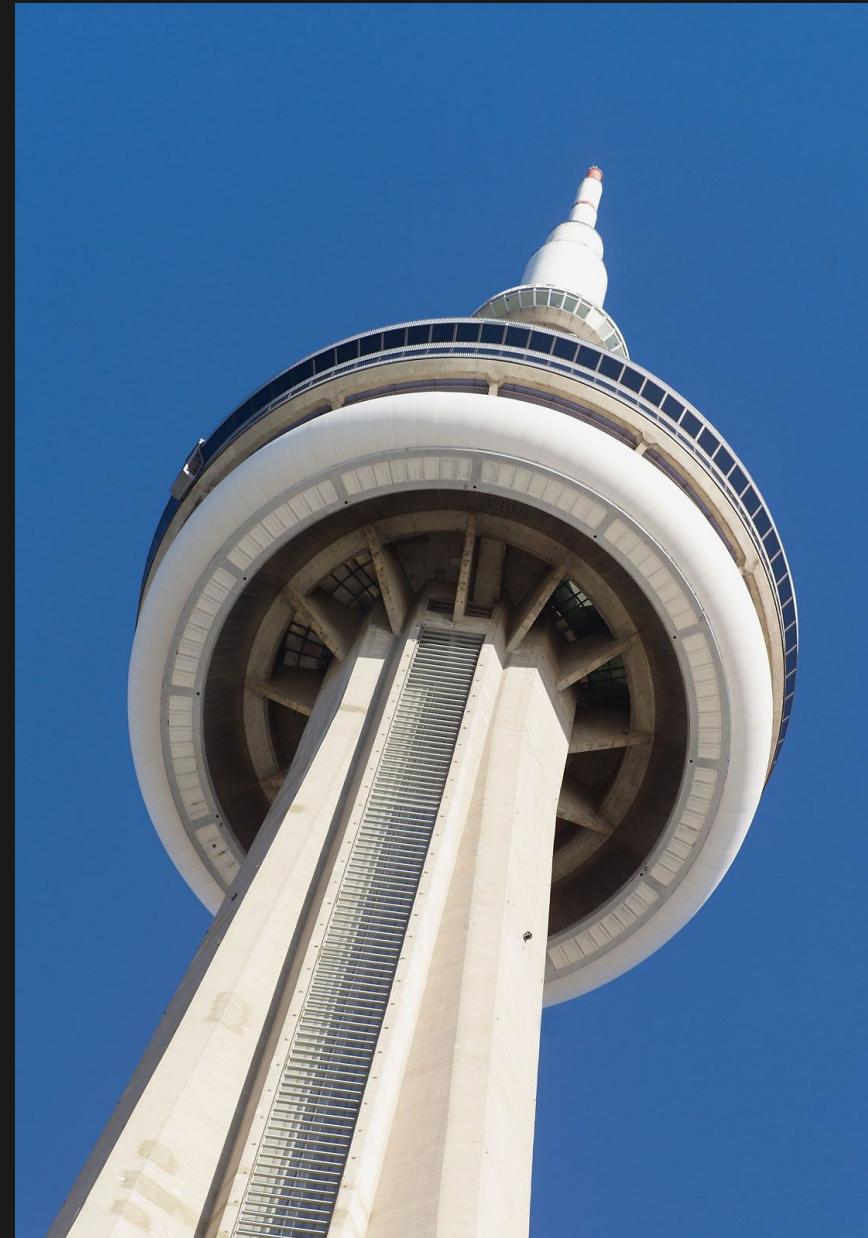


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12:45PM-3:00PM



3:15PM – 6:00PM

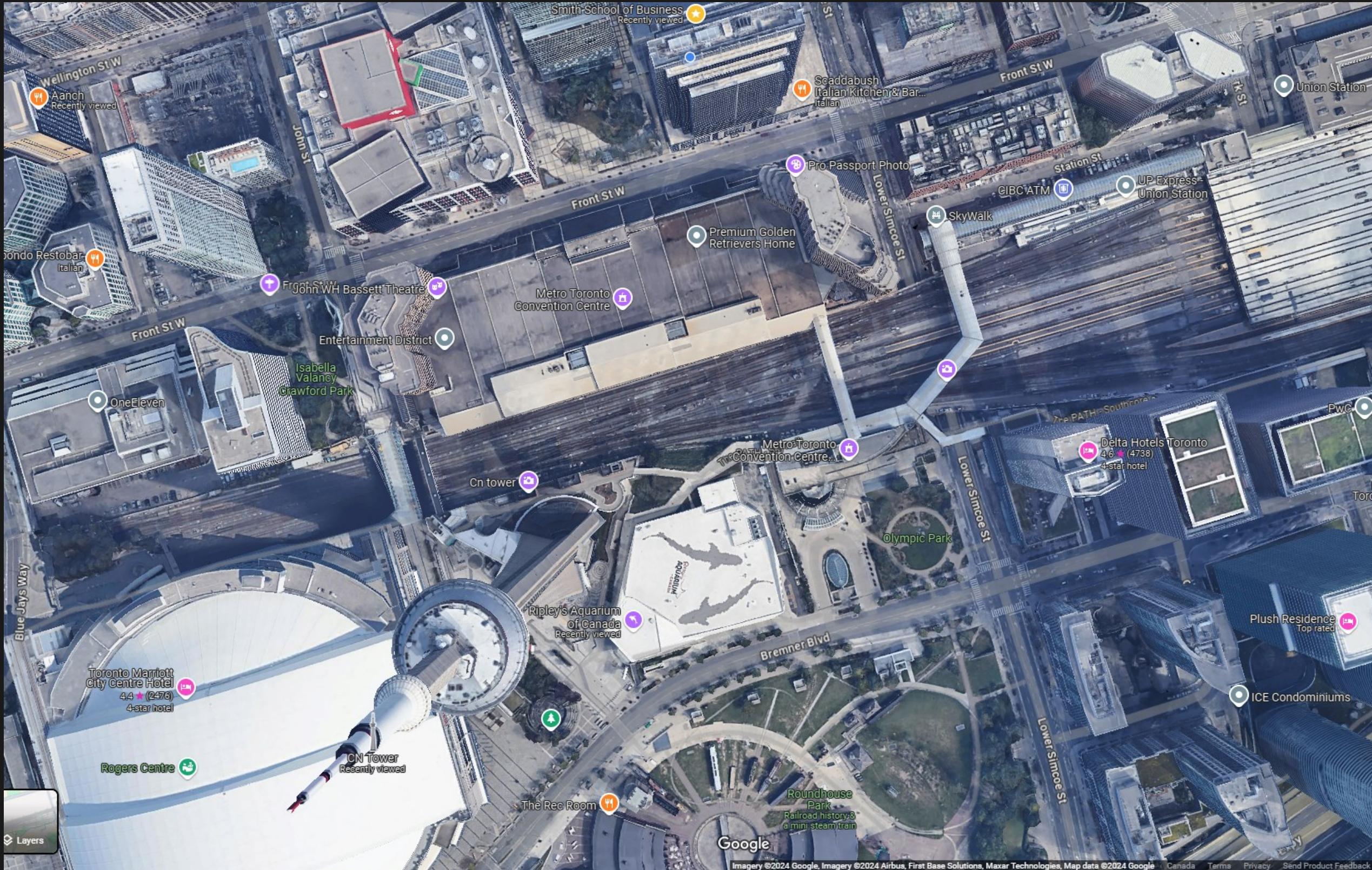


Thursday Excursion

12:45PM meet at aquarium entrance



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Internet Access



Please Use eduroam or the Guest Network



Online Communication



Please check your email for the link to join the Slack group





SPEAK UP



Please participate and ask questions, we will be going through lots of material

