

# Inkar Kapen

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Education	<b>University of Washington</b> , Bothell, WA Bachelor of Science in Computer Science, Dean's List, GPA 3.78 <b>North Seattle College</b> , Seattle, WA Associate's in Science	Sep. 2021 – June 2023  Jan. 2016 – Dec. 2020
Research Experience	<b>Bioinformatics Analyst</b> <b>Data Analyst</b> <i>Allen Institute for Brain Science</i> Working on the <i>Human, Macaque, and Mouse Consensus Cell Type Atlas of the Spinal Cord</i> as a core contributor (among other brain-region atlas efforts) and leading the <i>Probabilistic Inference of Anatomical Region Underlying Whole Brain Tiling</i> project as the first author. <ul style="list-style-type: none"><li>Segmented motor and all neurons from NeuN-stained images, performed differential analysis of cell sizes across lamina and sections in spinal cord.</li><li>Utilized machine learning techniques, including scANVI models, to perform cell type mapping and classification for newly dissected primate brain multi-omics single-cell datasets.</li><li>Applied existing machine learning models to label cell types in a 2-million-cell RNA dataset from mammalian motor cortex, and conducted evolutionary gene conservation analysis.</li><li>Built a probabilistic inference tool for dissected brain data, ensuring precision and reliability in inferring brain regions and cell types. Presented at the SFN conference in October 2024.</li><li>Compiled taxonomies with cell type labels and benchmarked label predictions using ML models. Results are published on a public-facing brain-map.org</li></ul> <b>Undergraduate ML/AI Research Assistant</b> with Dr. Afra Mashhadi <i>University of Washington Bothell</i> Worked on <i>Missing Maps: Identifying Remote Communities Using Satellite Imagery and Machine Learning</i> project as the main researcher, funded by Mary Gates Research Scholarship. <ul style="list-style-type: none"><li>Trained U-Net and LinkNet models with ResNet34 backbone to recognize communities on satellite images, and used loss amplification technique to improve the model's performance.</li><li>Compiled a satellite imagery dataset of 5,000 high-resolution images sourced from 44 countries and 97 regions across six continents.</li><li>Presented my research at UW Undergraduate Research Symposium on May 19, 2023.</li></ul>	Sep. 2025 – Present Sep. 2023 – Sep. 2025 Seattle, WA  Sep. 2022 – June 2023 Bothell, WA
Publications	<b>Kapen I.</b> , ..., Bakken T., Johansen N. 2026. <i>Probabilistic Inference of Anatomical Region Underlying Whole Brain Tiling</i> . Manuscript in preparation.  Schmitz M., Johansen N., Kempynck N., <b>Kapen I.</b> , ..., et al. 2025. <i>Human, Macaque, and Mouse Consensus Cell Type Atlas of the Spinal Cord</i> . Submitted to Neuron.  Johansen N., Fu Y., ... <b>Kapen I.</b> , ..., et al. 2025. <i>Cross-species Consensus Atlas of the Primate Basal Ganglia</i> . Submitted to Cell.  Fu Y., Johansen N., ..., <b>Kapen I.</b> , ..., et al. 2025. <i>Human Basal Ganglia Astrocyte Diversity Reflects Circuit and Evolutionary-Level Specialization</i> . Submitted to Cell.  Wirthlin M., ..., <b>Inkar Kapen</b> , ..., et al. 2026. <i>Transcriptional Innovation in the Evolution of Mammalian Motor Cortex</i> . Manuscript in preparation.	
Presentations	<b>Kapen I.</b> , ..., Bakken T., Johansen N. <i>Probabilistic Inference of Anatomical Region Underlying Whole Brain Tiling</i> . Genomic and Transcriptomic Techniques II, Society for Neuroscience Conference, Chicago, IL, Oct. 2024 (poster).  <b>Kapen I.</b> , Mashhadi A. <i>Missing Maps: Identifying Remote Communities Using Satellite Imagery and Machine Learning</i> . Exploring the Intersection of AI, Digital Communities, and Space Analysis, University of Washington Undergraduate Research Symposium, Seattle, WA, May 2023 (poster and oral).	

Honors Awards	2025 (March), Allen Institute's Nautilex Hackathon Winner – \$500. 2023 (Spring), Top 1% UW Bothell Undergraduate Merit Scholarship – \$750. 2022 (Fall), Mary Gates Research Scholarship – \$5,000. 2021 – 2023 Dean's List, University of Washington Bothell. 2021 – 2023 Pell Grant, Washington Opportunity Grant. 2013 Silver Medal in the Regional/State Mathematical Olympiad, Astana, Kazakhstan.	
Teaching Experience	<b>Teaching Assistant, Precalculus II and Calculus I</b> <i>University of Washington Bothell</i>	Sep. 2021 – June 2022 Bothell, WA
	Worked with Dr. Nicole Hoover in Fall & Spring, and Dr. Marina Moraiti in Winter 2022. <ul style="list-style-type: none"> <li>• Facilitated 25-minute in-class group work at the end of each class, section size of 38.</li> <li>• Helped students solve problems during graded group quizzes (3 per quarter).</li> <li>• Held 1 hour long office hours twice a week to answer questions and help with assignments.</li> </ul>	
Industry Experience	<b>Software Engineer I</b> <b>Software Engineer Intern</b> <i>eFinancial</i>	Apr. 2019 – Apr. 2021 June 2018 – Mar. 2019 Bellevue, WA
	Worked on migrating legacy applications to the cloud using serverless architecture. <ul style="list-style-type: none"> <li>• Designed and implemented enterprise-wide migration of legacy applications in 10+ domains to cloud technologies in AWS with the focus on CI/CD, application performance, and data security.</li> <li>• Transferred big data processing applications to AWS ECS from Lambda, decreasing fires related to that domain by over 80%.</li> <li>• Transitioned 15+ code repositories to BitBucket and configured CI/CD pipelines with role-based privileges, and code coverage of at least 70%.</li> <li>• Mentored interns on technical skills and domain knowledge. Participated in recruitment efforts.</li> </ul>	
	<b>Software Engineer Intern</b> <i>GeneMod</i>	Apr. 2018 – Sep. 2018 Seattle, WA
	Developed an application to track sample inventory in freezers. <ul style="list-style-type: none"> <li>• Designed and developed web applications from scratch using JavaScript, HTML, and CSS.</li> <li>• Built SPA using JQuery/JSON and leveraged Local Storage for data manipulations.</li> </ul>	
Relevant Coursework	<b>ML/AI:</b> Deep Learning and AI (grad. level), Analyzing Biases in ML, Intro to AI. <b>Math:</b> Calculus I & II & III, Linear Algebra, Vector Calculus. <b>Engineering:</b> Probability and Statistics in Engineering, Engineering Physics I & II & III.	
Programming Skills	<b>Languages:</b> Python, R, C/C++, C#, Java, JavaScript. <b>Libraries:</b> PyTorch, TensorFlow, Scanpy, scVI, scANVI, pandas, NumPy, Matplotlib. <b>Developer Tools:</b> CodeOcean, AWS, Docker, SQL, NoSQL, Git, CI/CD.	
Certifications	AWS Cloud Practitioner Certification, Dec. 2019 ( <i>valid. num.:</i> CJJQ1Q6D3JE11YGM).	
References	<b>Dr. Nelson Johansen</b> Scientist II at Allen Institute <b>Email:</b> nelson.johansen@alleninstitute.org	<b>Dr. Afra Mashhadi</b> Assistant Professor of CS at UW Bothell <b>Email:</b> mashhadi@uw.edu
	<b>Dr. Trygve Bakken</b> Assistant Investigator at Allen Institute <b>Email:</b> trygveb@alleninstitute.org	<b>Stanley Ng</b> Director of Software Engineering at eFinancial <b>Email:</b> stanleyng@efinancial.com