

CURRICULUM VITAE
DANIEL ALEXANDER ALBER



EDUCATION

M.D.	New York University Grossman School of Medicine Vilcek Merit Scholar	Expected 2026
Sc.B.	Brown University Honors in Applied Mathematics-Biology Thesis: “A Statistical Framework for the Analysis of Directed Interactions in Stereotactic EEG Data”	May 2022

PUBLICATIONS

1. Vishwanath K, Stryker J, Alyakin A, **Alber DA**, Oermann EK. *MedMobile: A mobile-sized language model with clinical capabilities*. Accepted, BMJ Digital Health & AI. (Preprint arxiv.org/abs/2410.09019)
2. Sangwon KL, Han X, Becker A, Zhang Y, Ni R, Zhang J, **Alber DA**, Alyakin A, Nakatsuka M, Fabbri N, Aphinyanaphongs Y, Yang JT, Chachoua A, Kondziolka D, Laufer I, Oermann EK. *Automating the referral of bone metastases patients with and without the use of large language models*. Neurosurgery, 2025 (To Appear).
3. **Alber DA**, Yang Z, Alyakin A, Yang E, Rai S, Valliani AA, Zhang J, Rosenbaum GR, Amend-Thomas AK, Kurland DB, Kremer CM, Eremiev A, Negash B, Wiggan DD, Nakatsuka MA, Sangwon KL, Neifert SN, Khan HA, Save AV, Palla A, Grin EA, Hedman M, Nasir-Moin M, Liu XC, Jiang LY, Mankowski MA, Segev DL, Aphinyanaphongs Y, Riina HA, Golfinos JG, Orringer DA, Kondziolka D, Oermann EK. *Medical large language models are vulnerable to data-poisoning attacks*. Nature Medicine, 2025.
4. Kurland DB**, **Alber DA****, Palla A, de Souza DN, Lau D, Laufer I, Frempong-Boadu AK, Kondziolka D, Oermann EK. *Augmenting Large Language Models with Automated, Bibliometrics-Powered Literature Search for Knowledge Distillation: A Pilot Study for Common Spinal Pathologies*. Neurosurgery, 2025. (**equal contribution)
5. Rosenbaum GR, Jiang LY, Sheth I, Stryker J, Alyakin A, **Alber DA**, Goff NK, Joon Y, Markert J, Nasir-Moin M, Niehues JM, Sangwon KL, Yang E, Oermann EK. *MedG-KRP: Medical Graph Knowledge Representation Probing*. Findings of Machine Learning for Health, 2024.

6. Reinecke D, Maarouf N, Smith A, **Alber D**, Markert J, Goff NK, Hollon TC, Chowdury A, Jiang C, Hou X, Meissner AK, Fürtjes G, Ruge MI, Ruess D, Stehle T, Al-Shughri A, Körner LI, Widhalm G, Roetzer-Pejrimovsky T, Golfinos JG, Snuderl M, Neuschmelting V, Orringer DA. *Fast intraoperative detection of primary CNS lymphoma and differentiation from common CNS tumors using stimulated Raman histology and deep learning*. Neuro-Oncology, 2024.
7. Alyakin A, Kurland DB, **Alber DA**, Sangwon KL, Li D, Tsigos A, Leuthardt E, Kondziolka D, Oermann EK. *CNS-CLIP: Transforming a Neurosurgical Journal into a Multimodal Medical Model*. Neurosurgery, 2024.
8. Kurland DB, **Alber D**, Smith A, Ahmed S, Orringer D, Frempong-Boadu A, Lau D. *What Are We Transfusing? Evaluating the Quality and Clinical Utility of Intraoperatively Salvaged Red Blood Cells in Spinal Deformity Surgery: A Nonrandomized Controlled Trial*. Neurosurgery (Cover article), 2024.
9. Sangwon KL, Nguyen M, Wiggan DD, Negash B, **Alber DA**, Liu XC, Liu A, Rabbin-Birnbaum C, Sharashidze V, Baranoski J, Raz E, Shapiro M, Rutledge C, Nelson PK, Riina H, Russin J, Oermann EK, Nossek E. *Assessing superficial temporal artery-middle cerebral artery anastomosis patency using FLOW 800 hemodynamics*. Journal of Neurosurgery, 2024.
10. Eremiev A, Huell D, Solis J, Rabbin-Birnbaum C, **Alber DA**, Dastagirzada YM, Kurland DB, Harter DH. *The History of Bellevue Neurosurgery: A Legacy of Learning and Service*. Journal of Neurosurgery, 2024.
11. Mir JM, Kurland DB, Cheung ATM, Liu A, Shlobin NA, **Alber D**, Rai S, Jain V, Rodriguez-Olaverri JC, Anderson RCE, Lau D, Kondziolka D, Oermann EK. *The Evolution of Pediatric Spine Surgery: A Bibliometric Analysis of Publications from 1902-2023*. Neurosurgery Practice, 2024.
12. Nasir-Moin M, Wadiura LI, Sacalean V, Juros D, Movahed-Ezazi M, Lock EK, Smith A, Lee M, Weiss H, Müther M, **Alber D**, Ratna S, Fang C, Suero-Molina E, Hellwig S, Stummer W, Rössler K, Hainfellner JA, Widhalm G, Kiesel B, Reichert D, Mischkulnig M, Jain R, Straehle J, Neidert N, Schnell O, Beck J, Trautman J, Pastore S, Pacione D, Placantonakis D, Oermann EK, Golfinos JG, Hollon TC, Snuderl M, Freudiger CW, Heiland DH, Orringer DA. *Localization of protoporphyrin IX in glioma patients with paired stimulated Raman histology and two-photon excitation fluorescence microscopy*. Nature Biomedical Engineering (Cover Article), 2024.
13. Jiang C, Bhattacharya A, Linzey JR, Joshi RS, Cha SJ, Srinivasan S, **Alber D**, Kondepudi A, Urias E, Pandian B, Al-Holou WN, Sullivan SE, Thompson BG, Heth JA, Freudiger CW, Khalsa SSS, Pacione DR, Golfinos JG, Camelo-Piragua S, Orringer DA, Lee H, Hollon TC. *Rapid Automated Analysis of Skull Base Tumor Specimens Using Intraoperative Optical Imaging and Artificial Intelligence*. Neurosurgery (Cover article), 2022.
14. **Alber DA**, Dalton MK, Uribe-Leitz T, Ortega G, Salim A, Haider AH, Jarman MP. *A Multistate Study of Race and Ethnic Disparities in Access to Trauma Care*. Journal of Surgical Research (Featured article), 2021.

PREPRINTS/IN REVIEW

1. Chen SF, Alyakin A, Seas A, Yang E, Choi J, Lee JV, Chen A, Warman P, Bitolas R, Steele RJ, **Alber D**, Oermann EK. Large language models in clinical medicine: an LLM-powered large-scale systematic review. In review, *Nature Medicine*.
2. Sangwon KL, Zhang J, Steele R, Stryker J, **Alber DA**, Valliani A, Kannapadi N, Ryoo J, Feng A, Khan HA, Neifert S, Orillac C, Weiss HK, Kim NC, Kurland D, Riina HA, Kondziolka D, Mankowski M, Oermann EK. *A Multi-AI Agent Framework for Interactive Neurosurgical Education and Evaluation: From Vignettes to Virtual Conversations*. Preprint. medrxiv.org/content/10.1101/2025.08.20.25334084v1. In review, *Neurosurgery Practice*.
3. Sangwon KL, Zhang J, Steele R, Stryker J, Lee VJ, Choi J, Vishwanath K, **Alber DA**, Kondziolka D, Mankowski M, Oermann EK. *Evaluating Large Language Model Diagnostic Performance on JAMA Clinical Challenges via a Multi-Agent Conversational Framework*. Preprint. medrxiv.org/content/10.1101/2025.08.20.25334087v1
4. **Alber DA**, Phillips KG, Oermann EK, Grossi EA, Mosca RS. *A Cardiac Surgery-Specific Artificial Intelligence Model to Automate Risk Stratification for 30-day Readmissions Using Discharge Summaries*. In review, *The Annals of Thoracic Surgery*.
5. Dua R, Young Joon F, Dogra S, Freedman D, Ruan D, Nashawaty M, Rigau D, **Alber DA**, Zhang K, Cho K, Oermann EK. *Clinically Grounded Agent-based Report Evaluation: An Interpretable Metric for Radiology Report Generation*. Preprint. arxiv.org/abs/2508.02808
6. Maarouf N, Reinecke D, Smith A, Markert JE, Cogan TG, Han X, Alyakin A, **Alber DA**, Park M, Goff NK, Weiss H, Harake ES, Eddy K, Hollon T, Oermann EK, Orringer DA. *Natural Language Processing Methods Automate Glioma Molecular Marker Extraction*. In review, *Neurosurgery*.
7. Vishwanath K, Alyakin A, Ghosh M, Lee JV, **Alber DA**, Sangwon KL, Kondziolka D, Oermann EK. *Evaluating the performance and fragility of large language models on the self-assessment for neurological surgeons*. Preprint. (In review, *Neurosurgery*). arxiv.org/abs/2505.23477
8. Vishwanath K, Alyakin A, **Alber DA**, Lee JV, Kondziolka D, Oermann EK. *Medical large language models are easily distracted*. Preprint. (In review, *NPJ Digital Medicine*). arxiv.org/abs/2504.01201
9. Singh S, Alyakin A, **Alber DA**, Stryker J, Tong APS, Sangwon K, Goff N, de la Paz M, Hernandez-Rovira M, Park KY, Leuthardt EC, Oermann EK. *It's Too Many Options: Pitfalls of Multiple-Choice Questions in Generative AI and Medical Education*. Preprint. (In review, *Scientific Reports*). arxiv.org/abs/2503.13508
10. Hang C, Deng R, Jiang LY, Yang Z, Alyakin A, **Alber D**, Oermann EK. *BPQA Dataset: Evaluating How Well Language Models Leverage Blood Pressures to Answer Biomedical Questions*. Preprint. arxiv.org/abs/2503.04155
11. Alyakin A, Stryker J, **Alber DA**, Sangwon KL, Duderstadt B, Save A, Kurland DB, Frome S, Singh S, Zhang J, Yang E, Park KY, Orillac C, Valliani A, Neifert S, Liu A, Patel A, Livia C, Lau D, Laufer I, Rozman P, Hidalgo E, Riina H, Feng R, Hollon T, Aphinyanaphongs Y, Golfinos J, Snyder L, Leuthardt E, Kondziolka D, Oermann EK. *Repurposing the Scientific Literature with Vision-Language Models*. Preprint. (In review, *NEJM AI*). arxiv.org/abs/2502.19546

ABSTRACTS & POSTERS

1. **Alber DA**, Phillips KG, Oermann EK, Grossi EA, Mosca RS. *Artificial Intelligence Analysis of Free-Text Discharge Summaries Facilitates Automated Risk Stratification for Cardiac Surgery Readmissions*. Poster, AHA Scientific Sessions 2025 (Upcoming).
2. **Alber DA**, Razzaq S, Mansur A, Schumacher L, Cerfolio RJ. *AI For Everyone: Open Source Artificial Intelligence and Computer Vision to Analyze Robotic Thoracic Surgery Videos*. Rapid-fire oral. 2025 Southern Thoracic Surgical Association Annual Meeting (Upcoming).
3. Khan H et al. (Including **Alber D**). *Prospective Quantification of Blood Loss During Adult Spinal Deformity Surgery: Defining the Optimal Intraoperative Hemoglobin Target*. 2024 International Spinal Deformity Symposium.
4. Reinecke D et al. (Including **Alber D**). *Rapid Intraoperative Differentiation of Primary CNS Lymphoma From Common CNS Tumors Using Stimulated Raman Histology and Deep Learning*. 2024 Society for Neuro-Oncology. Houston, TX.
5. Bi CL et al. (Presented by **Alber DA**). *Digital Biomarkers and the Evolution of Spine Care Outcomes Measures: Smartphones and Wearables*. Oral Presentation. 2024 Congress of Neurological Surgeons. Spine Paper of the Year Award.
6. Kurland D, **Alber DA**, et al. *Bibliometrics-Guided AI-Powered Knowledge Distillation for Common Spinal Pathologies*. 2024 Spine Summit. Las Vegas, NV.
7. **Alber DA** et al. *A Deep Learning-Based Method for Rapid, Patient-Specific Assay of Macrophage Infiltration in High-Grade Glioma Using Label-Free Stimulated Raman Histology*. Poster. 2023 Society for Neuro-Oncology. Vancouver, BC.
8. **Alber DA** et al. *Deep Learning-Based Image-to-Image Translation to Identify Macrophage Infiltration in High-Grade Glioma Using Label-Free Stimulated Raman Histology*. Oral Presentation. 2023 Congress of Neurological Surgeons. Washington, DC. Best Data Science award.
9. **Alber DA** et al. *Spine-Tuned Natural Language Models and Bespoke Regular Expression Classifiers for Automated Spinal Surgery Registry Development*. Oral Presentation. 2023 Congress of Neurological Surgeons. Washington, DC.
10. **Alber DA** et al. *ShuntBot: Fine-Tuning Large Language Models to Automate Construction of an Institutional Hydrocephalus Shunt Database*. Digital Poster. 2023 Congress of Neurological Surgeons. Washington, DC.
11. Kurland D, **Alber DA**, Lau D. *What Are We Transfusing? A Prospective Trial Evaluating the Quality of Intraoperatively Salvaged Red Blood Cells in Spinal Deformity Surgery*. Oral Presentation. 2023 Congress of Neurological Surgeons. Washington, DC. Best Resident Paper Award.
12. Sangwon KL, **Alber DA**, et al. *Generative Artificial Intelligence Framework for Synthetic MRIs of Brain Metastases Patients*. Digital Poster. 2023 Congress of Neurological Surgeons. Washington, DC.
13. Lock E, **Alber DA**, et al. *The Impact of Tumor Mutational Status on Protoporphyrin IX Accumulation in Tumor-Associated Macrophages in Glioblastoma Patients*. Oral Presentation. 2023 Congress of Neurological Surgeons. Washington, DC. Gladiator award.
14. Sangwon KL et al. (including **Alber DA**). *Predicting STA-MCA Anastomosis Patency Using FLOW800*. Oral Presentation. 2023 Congress of Neurological Surgeons. Washington, DC.

15. **Alber DA** et al. *Evaluating the Quality of Salvaged Blood Products Using Stimulated Raman Spectroscopy and Deep Learning*. 2023 Machine Learning for Healthcare. New York, NY.
16. Sangwon KL, Liu A, Rabbin-Birnbaum C, Wiggan DD, **Alber DA**, Nossek E. *Predicting STA-MCA Anastomosis Patency Using FLOW800*. 2023 European Association of Neurosurgical Societies.
17. Movahed-Ezazi M et al. (including **Alber D**). *Application of Stimulated Raman Histology as a Surrogate to Oil Red O for Intraoperative Diagnosis of Hemangioblastoma*. Poster. 2023 American Association of Neuropathologists. Monterey, CA.
18. Movahed-Ezazi M et al. (including **Alber D**). *Clinical Validation of Stimulated Raman Histology for Rapid Intraoperative Diagnosis of CNS Tumors*. Poster. 10th World Digital Pathology & AI UCG Congress. Berlin, Germany.
19. Kurland D, **Alber D**, Lau D. *What Are We Transfusing? A Prospective Trial Evaluating the Quality of Intraoperatively Salvaged Red Blood Cells in Spinal Deformity Surgery*. 2023 Spine Summit. Miami, FL.
20. Kurland D, **Alber D**, Lau D. *What Are We Transfusing? A Prospective Trial Evaluating the Quality of Intraoperatively Salvaged Red Blood Cells in Spinal Deformity Surgery*. 2023 International Meeting on Advanced Spine Techniques. Dublin, Ireland.
21. Kurland D, **Alber D**, Smith A, Hilbert T, Lau D. *Defining the Quality of Intraoperatively Salvaged Blood in Spinal Deformity Surgery and its Suitability for Autologous Transfusion: Preliminary Results of a Prospective Study*. Global Spine Congress 2023. Prague, Czech Republic. Best Science/Translational research paper award.
22. Nasir-Moin M et al. (including **Alber D**) *Quantitative Analysis of Tumor Cell Density and Protoporphyrin IX Fluorescence in Glioma Patients Using Paired Stimulated Raman Histology and Two-photon Excitation Fluorescence Microscopy*. 2022 Society for Neuro-Oncology. Tampa Bay, FL.
23. Orringer DA et al. (including **Alber D**) *Cellular localization of protoporphyrin IX in glioblastoma*. 2022 American Academic of Neurological Surgery. Colorado Springs, CO
24. Bhattacharya A, **Alber D**, Hollon TC. *Single-Cell Phenotyping Using Optical Imaging and Artificial Intelligence*. 2022 Machine Learning for Healthcare. Durham, NC.
25. Shaikhouni A, Pindrik J, Arredondo K, Ostendorf A, **Alber D**, Ahrens S, Beatty C. *Invasive Investigation of Thalamocortical Epileptic Network Activity to Select Candidates for Deep Brain Stimulation of the Centromedian Nucleus Among Patients With Medically Intractable Epilepsy*. Oral Presentation. 2022 American Society for Stereotactic and Functional Neurosurgery. Atlanta, GA.
26. Orlas C, Jarman MP, Uribe-Leitz PT, Castillo-Angeles M, **Alber DA**, Herrera-Escobar J, Nehra D. *Is There a 'Weekend Effect' for Traumatically Injured Patients in the United States?* 2020 Academic Surgical Congress. Orlando, FL.
27. **Alber DA**, Uribe-Leitz PT, Ortega G, Salim A, Haider AH, Jarman MP. *Multistate Study of Disparities in Trauma Care: Are People of Color at Higher Risk of Under-triage?* 2019 Academic Surgical Congress. Houston, TX.

AWARDS & HONORS

Member for a Day Scholarship American Association for Thoracic Surgery 2025 Annual Meeting	May 2025
Best Data Science Award Congress of Neurological Surgeons 2023 Annual Meeting	September 2023
Summer Research Fellowship (\$1000) NYU Grossman School of Medicine	June 2023
NREF Medical Student Summer Research Fellowship (\$2500) Neurosurgery Research and Education Foundation	June 2023
Vilcek Full Cost-of-Attendance Merit Scholarship (\$400,000) NYU Grossman School of Medicine	2022-2026
Sigma Xi Scientific Research Honor Society Brown University	May 2022
Departmental Honors, Division of Applied Mathematics Brown University	May 2022
Win Wilson '51 Service Award Brown University Swimming and Diving	April 2022
Karen T. Romer Undergraduate Teaching and Research Award (\$2500) Truccolo Lab, Brown University	May 2021
Featured Article, Journal of Surgical Research Center for Surgery and Public Health, Brigham and Women's Hospital	January 2021
USA Swimming Scholastic All-American	2016-2018

TEACHING

Anatomy, NYU Grossman School of Medicine <i>Anatomy teaching assistant for first-year medical students.</i>	Fall 2024
Data Science Course, Congress of Neurological Surgeons National Meeting <i>Paid full-day seminar with didactic and practical sessions covering essential data science topics.</i>	September 2024
OLAB, NYU Grossman School of Medicine <i>Lectured on software engineering topics and organized journal club to develop students' technical and presentation skills.</i>	Summer 2024
Foundational Clinical Skills, NYU Grossman School of Medicine <i>Led physical exam boot camp for first-year medical students.</i>	Summer 2023
OLAB, NYU Grossman School of Medicine <i>Lectured on medicine and software engineering topics while supervising high school and undergraduate data science interns.</i>	Summer 2023

EXTRACURRICULAR ACTIVITIES

Violet Society Peer Leader, NYU Grossman School of Medicine	2025-present
Cardiothoracic Surgery Interest Group, NYU Grossman School of Medicine	2023-present
Admissions Interviewer, NYU Grossman School of Medicine	2023-present
Editorial Board, Agora Arts & Humanities Magazine, NYU Grossman SOM	2022-present
Admissions Ambassador, NYU Grossman School of Medicine	2022-present
Orientation Leader, NYU Grossman School of Medicine	Summer 2023
Volunteer, Hepatitis Project, NYU Grossman School of Medicine	2023
Co-President, AANS Student Chapter, NYU Grossman School of Medicine	2022-2023
Meiklejohn First-Year Advisor, Brown University	2020-2022
Applied Mathematics Peer Advising Leader, Brown University	2020-2022
Volunteer Medical Assistant, Rhode Island Free Clinic	2020-2022
NCAA Division I Athlete, Brown University Varsity Men's Swimming and Diving	2018-2022
Mathematics Grader, Calculus, Brown University	2021
Fundraising Team Captain, Swim Across America RI	2018-2021
Teaching Assistant, Organic Chemistry, Brown University	2020
Volunteer, Rhode Island Food Bank	2018-2020

SERVICE TO PROFESSION

Nature Protocols – *Reviewer*
NPJ Digital Medicine – *Reviewer*
Scientific Reports – *Reviewer*

BOARD EXAMINATIONS

USMLE Step 1 – Pass (September 2023)
USMLE Step 2 – 263 (September 2024)

LANGUAGES

English (Native)
Russian (Native)