Deep Learning & AI In Neuro-Ophthalmology: What Is The Clinical Utility?
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Chuter, B., Huynh, J., Hallaj, S., Walker, E., Liebmann, J. M., Fazio, M. A., Girkin, C. A., Weinreb, R. N., Christopher, M., & Zangwill, L. M. (2024). Evaluating a Foundation Artificial Intelligence Model for Glaucoma Detection Using Color Fundus Photographs. *Ophthalmology science*, *5*(1), 100623. https://doi.org/10.1016/j.xops.2024.100623

Doshi, H., Solli, E., Elze, T., Pasquale, L. R., Wall, M., & Kupersmith, M. J. (2022). Unsupervised Machine Learning Shows Change in Visual Field Loss in the Idiopathic Intracranial Hypertension Treatment Trial. *Ophthalmology*, *129*(8), 903–911. https://doi.org/10.1016/j.ophtha.2022.03.027

Dumitrascu, O. M., Wang, Y., & Chen, J. J. (2022). Clinical Machine Learning Modeling Studies: Methodology and Data Reporting. *Journal of neuro-ophthalmology : the official journal of the North American Neuro-Ophthalmology Society*, *42*(2), 145–148. https://doi.org/10.1097/WNO.0000000000001605

Goh, W. W., Chia, K. Y., Cheung, M. F., Kee, K. M., Lwin, M. O., Schulz, P. J., Chen, M., Wu, K., Ng, S. S., Lui, R., Ang, T. L., Yeoh, K. G., Chiu, H. M., Wu, D. C., & Sung, J. J. (2024). Risk Perception, Acceptance, and Trust of Using AI in Gastroenterology Practice in the Asia-Pacific Region: Web-Based Survey Study. *JMIR AI*, *3*, e50525. https://doi.org/10.2196/50525

Gungor, A., Najjar, R. P., Hamann, S., Tang, Z., Lagrèze, W. A., Sadun, R., Sathianvichitr, K., Dinkin, M. J., Oliveira, C., Li, A., Sadun, F., Carey, A. R., Bouthour, W., Lin, M. Y., Loo, J. L., Miller, N. R., Newman, N. J., Biousse, V., Milea, D., & BONSAI Group (2024). Deep Learning to Discriminate Arteritic From Nonarteritic Ischemic Optic Neuropathy on Color Images. *JAMA ophthalmology*, *142*(11), 1073–1079. https://doi.org/10.1001/jamaophthalmol.2024.4269

Milea, D., Najjar, R. P., Zhubo, J., Ting, D., Vasseneix, C., Xu, X., Aghsaei Fard, M., Fonseca, P., Vanikieti, K., Lagrèze, W. A., La Morgia, C., Cheung, C. Y., Hamann, S., Chiquet, C., Sanda, N., Yang, H., Mejico, L. J., Rougier, M.-B., Kho, R., Thi Ha Chau, T., … BONSAI Group (2020). Artificial Intelligence to Detect Papilledema from Ocular Fundus Photographs. *The New England journal of medicine*, *382*(18), 1687–1695. https://doi.org/10.1056/NEJMoa1917130

Moss H. E. (2024). Deep Learning to Improve Diagnosis Must Also Not Do Harm. *JAMA ophthalmology*, *142*(11), 1079–1080. https://doi.org/10.1001/jamaophthalmol.2024.4377

Noyan, M., & Beeching, E. (2024). Vision Language Models Explained. *Hugging Face Blog*. https://huggingface.co/blog/vlms

Ravindranath, R., Stein, J. D., Hernandez-Boussard, T., Fisher, A. C., Wang, S. Y., & SOURCE Consortium (2024). The Impact of Race, Ethnicity, and Sex on Fairness in Artificial Intelligence for Glaucoma Prediction Models. *Ophthalmology science*, *5*(1), 100596. https://doi.org/10.1016/j.xops.2024.100596

Rothwell, P. M., Giles, M. F., Flossmann, E., Lovelock, C. E., Redgrave, J. N., Warlow, C. P., & Mehta, Z. (2005). A simple score (ABCD) to identify individuals at high early risk of stroke after transient ischaemic attack. *Lancet (London, England)*, *366*(9479), 29–36. https://doi.org/10.1016/S0140-6736(05)66702-5

Shah, N. H., Entwistle, D., & Pfeffer, M. A. (2023). Creation and Adoption of Large Language Models in Medicine. *JAMA*, *330*(9), 866–869. https://doi.org/10.1001/jama.2023.14217

Tailor, P. D., Dalvin, L. A., Starr, M. R., Tajfirouz, D. A., Chodnicki, K. D., Brodsky, M. C., Mansukhani, S. A., Moss, H. E., Lai, K. E., Ko, M. W., Mackay, D. D., Di Nome, M. A., Dumitrascu, O. M., Pless, M. L., Eggenberger, E. R., & Chen, J. J. (2025). A Comparative Study of Large Language Models, Human Experts, and Expert-Edited Large Language Models to Neuro-Ophthalmology Questions. *Journal of neuro-ophthalmology : the official journal of the North American Neuro-Ophthalmology Society*, *45*(1), 71–77. https://doi.org/10.1097/WNO.0000000000002145

Zipori, A. B., Kerley, C. I., Klein, A., & Kenney, R. C. (2022). Real-World Translation of Artificial Intelligence in Neuro-Ophthalmology: The Challenges of Making an Artificial Intelligence System Applicable to Clinical Practice. *Journal of neuro-ophthalmology : the official journal of the North American Neuro-Ophthalmology Society*, *42*(3), 287–291. https://doi.org/10.1097/WNO.0000000000001682