Developing a predictive model for conversion of Age-Related Macular Degeneration

PCM TEAM OBSIDIAN: Madeleine S. Gastonguay, Yujie Zhao, Todd Hartman, Gwyneth Alexander, Kamel Ullah
CLINICAL TEAM: Alvin Liu, Craig Jones, Yuwan Liu
ENGINEERING PIs: Joseph Greenstein, Casey Overby-Taylor

AGE RELATED MACULAR DEGENERATION (AMD):
• Leading cause of vision loss in persons over 50
• 300 million people will have AMD globally by 2040 [1]
• All patients start with the dry form and some will convert to wet AMD which causes central vision loss
• Optical Coherence Tomography (OCT) scans are used to diagnose and manage the disease [2]
• Early intervention is crucial for treatment success [1]

PROBLEM: Retinal specialists can only provide average risk estimates for conversion from dry to wet AMD over 5 years; these estimates are not fine-grained enough to provide meaningful, actionable information.

NEED: Clinicians need a way to predict if a patient will convert to wet AMD prior to their next screening, which is typically every 6 months. This will allow for earlier intervention, leading to improved treatment outcomes.

METHODS:

CONCLUSIONS:
• Our models can provide clinically actionable predictions for conversion to wet AMD
• Clinical data provides a slight increase in predictive power over OCT scans alone
• This framework can be used to predict treatment response

Including multimodal data increases diagnostic specificity for predicting conversion.

Incorporating multimodal data in a neural network boosts performance for predicting first eye conversions.


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