



**Figure 1.** The deep neural network (DNN) model architecture. Three electronic health record data modalities contain information related to surgical candidacy: (1) neurology notes, (2) structured data, and (3) EEG and MRI reports. Free-text neurology notes and EEG and MRI reports were preprocessed, parsed into n-grams, and analyzed with support vector machines (SVM). Structured data were analyzed using a random forest with 1,000 trees (RF). Outputs from the three models, plus a log-transformed time component (number of days between the first and most recent neurology visit), were used as input features for a neural network with two hidden layers. Nodes in the two hidden layers are represented as circles. The final output of the DNN was the estimated probability of epilepsy surgery.