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|  | ISTANBUL AYDIN UNIVERSITY  SOFTWARE ENGINEERING DEPARTMENT  GRADUATION PROJECT PROPOSAL |

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| **Project Title** | Classifying MR images and Detecting Tumors using ANN’s in Image Processing, and The Contribution of Ensemble Techniques to Accuracy Rate | |
| **Project Team and Roles** | Proposed by  Sukru Bora KARAKUS (Supervisor)  Ismail EZA (Co-Supervisor) | |
| **Problem Statement** | The inadequacy of tumor detection technologies in the healthcare sector in some cases and the inability of models to provide a sufficient success rate in image processing techniques are undesirable situations in today's healthcare technologies.  The optimization of Artificial Neural Networks (ANNs) for MR image classification and tumor detection is challenging.  The role of ensemble techniques in improving accuracy rates needs to be explored for improved medical image analysis. | |
| **Project’s Objectives** | Training and Classification of ANNs, Improving the accuracy of MRI image classification using artificial neural networks (ANNs).  Tumor Detection, and increased precision in tumor detection within MRI images using ANNs.  Exploration of Ensemble Techniques, Investigating the impact of ensemble techniques on improving accuracy rates.  Comparison of Architectures, evaluating different ANN architectures to identify the most effective models. | |
| **Methodology/Approach** | Collect and prepare datasets of MRI images.  Design and develop different ANN architectures.  Analyze ensemble methods for combining models.  Train models on datasets.  Use some metrics and measures to assess models.  Analyze and compare models.  Document methodology, datasets, and results.  Publish compatible models, results, and metrics. | |
| **Project Deliverables** | A neural network-based tumor detection-optimized MR image classification approach.  Results from real-world simulations (real health data) demonstrate the reliability of the generated models.  Thorough documentation including statistics, performance metrics and methodological descriptions. | |
| **Timeline** | October | Research specific requirements for classifying MR images. |
| November | Examine previously used and currently used ANNs methods for the analysis of MR images. |
| December | Plan and select the models of ANNs for the classifying of MR images |
| January | Collecting MR image data suitable for the selected model / method. |
| February | Train models with the training data and use ensemble techniques to enhance accuracy. |
| March | Test the created models and adjust combinations of models using the datasets. |
| April | Investigate the impact of ensemble techniques on accuracy and optimize their integrations. |
| May | Apply data visualization processes to make metrics and result more understandable. |
| June | Prepare a document explaining datasets, performance metrics, and the approach. |