1. **Scope of work**

The technical effort by the student will be split among the following major areas:

* Participation in technical and design meetings
* Development of feature extraction algorithms to provide qualitative and/or quantitative attributes of a sermon’s delivery, including but not limited to the following:
  + Potential features:
    - Visual: eye contact, posture, gestures
    - Auditory: expressiveness/emotion, vocal variety, smoothness, volume
    - Textual: expressiveness/emotion, structural variety, phrasing
  + Associate extracted features with timespans (or less preferably, timestamps) to allow for more precise feedback and cross-mode analysis
  + For insight into the preaching evaluation process currently used by PRTS, the associated rubrics have been attached as appendices. The content-based categories may be considered out of scope for this work, but the style- and manner-based categories should be relevant for targeted feature extraction. The Poimenics Rubric (Appendix C) should be of particular relevance.
* For realizing the goals described above, the student will employ the following non-exhaustive list of technologies: machine learning techniques, video processing algorithms, cloud hosting infrastructure.
* Perform functional testing of the algorithms to verify feature extraction in varied cases

Furthermore, PRTS provides:

* Source code repository continuously accessible by the student via the Internet where all code changes and other project artifacts will be stored.
* A development environment for the student to develop the applications and provide initial testing.
* A testing environment for the student to test application releases before they are deployed into production.
* A data set of sermons (or speech) videos for feature extraction and analysis

1. **Project Timeline**

Fall 2024

August 26 PRTS provides access to source code repository, development environment, and other tools as described in the scope of work.

August 30 PRTS, advisor, & student have established plan for data set creation/growth, annotation, and usage

September 6 PRTS, advisor, & student have curated list of targeted attributes/features to be extracted

December 4 Student demonstrates feature extraction on limited data set for PRTS faculty; collect feedback on strategy to inform ongoing development and target deliverables

Winter 2025

January 6 PRTS, advisor, & student review gathered feedback, designate continued (or new) feature extraction goals

[Iterative] Student demonstrates feature extraction; PRTS gathers feedback; features are refined or new targets set

April 26 PRTS and student finalize all revisions to feature extraction

1. **Resource Requirements**

GVSU will staff the project with the following personnel:

* One full-time ACI Graduate Assistant - graduate student will work 20 hours weekly during project duration in the GVSU ACI facility.
* Faculty supervisor (R Rafiq) - will monitor GA’s progress and serve as a technical sounding board as needed.

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| Area Being  Evaluated | Fully Meeting Expectations | **Outcome** |
| *Exegesis*  */30* | Clear and accurate handling of the text. The sermon is based on logical or linguistic unit of text and is of manageable length for exposition. Due consideration to context and genre. Reflects analysis of original languages without being obtrusive. Key details are sufficiently addressed and handled. How the text generates and supports the points of sermon is clear. | We can detect the text from the sermon. Need a learning algorithm to make it understand if the key details are handled or addressed. Same thing goes for supporting the Sermon’s main purpose. |
| *Theology*  */25* | Clearly demonstrates the redemptive character of the text. Appropriate and unforced application to the person/work of Christ. Identifies clearly the doctrines in the text according to analogy of faith. Uses confessions. | Need a lot of speeches either in a doc format or a data format to understand the appropriate application of Christ, faith or confessions. |
| *Use of Supporting Scripture*  */20* | Effectively puts the text in its canonical context and employs the analogy of Scripture to interpret. Appropriately refers to other Scripture for illustration or support to reinforce the argument. | Able to understand the emotion of the texts. To employ the analogy of Scripture or support we need an algorithm that can learn from user’s input. |
| *Application*  */25* | Clear and specific. Directly derived from the claims of the text and can be supported exegetically. Appropriately nuanced in light of the whole of Scripture. | Same as above. |

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| Area Being  Evaluated | Fully Meeting Expectations | **Outcome** |
| Overall Impression  /10 | Dress is proper. No awkward mannerisms or facial expressions. Strong pulpit confidence; yet humble. | Need Guidance about dress but can work with the dataset we have. **SHORT TERM** |
| Eye Contact  /10 | Effectively engages the entire congregation. Avoids looking above or seemingly through the audience. Effectively connects with the people. | Need Guidance about dress but can work with the dataset we have. **SHORT TERM** |
| Vocal Variety  /10 | Effectively employs variation in pace, pitch, and volume. Variation helpful. Diction is clear and understandable. | Need to develop a Learning Algorithm |
| Reading of Text  /10 | Evidences respect for the **dignity of the text**. Reads authoritatively as it is the Word of God. | **Need to talk about it** |
| Gestures  /10 | Natural. Helpful. Uses a variety of hand movements that are large enough for the congregation to see. | Gesture based emotion can be identified. |
| Use of Notes  /10 | Completely and consistently unobtrusive. | **Need to talk about it** |
| Spiritual Guidance  /20 | Effectively engages a variety of hearers, with differing maturity levels. Makes a real connection instructs with tangibility and concreteness. | ? |
| Experiential Depth  /20 | Wonderful depth of experiential application brought in a loving/caring manner. More than textbook knowledge, good discrimination of saved/unsaved; growth in grace. | ? |

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| Area Being  Evaluated | Fully Meeting Expectations | Exceeding Expectations |
| Introduction  /10 | Arouses interest and commands attention. Clearly defines the relevance of topic and text to current situation. Clearly leads to the proposition setting the goals and direction of the sermon. | Need to develop a Learning Algorithm |
| Proposition  /15 | Effectively weds the topic/text and the major sermon objective in clear, concise, easily understood statement | Need more data |
| Outline  /20 | The points are textually based and clearly and progressively develop and support the proposition. The points are structured in parallel syntax and are mutually exclusive. The points are homiletically oriented, gnomic. | Need to develop a Learning Algorithm |
| Transitions  /10 | Movement from point to point and from exposition to application or illustration is smooth, logical and not abrupt. | ? |
| Progression/flow of thought  /20 | Demonstrates coherency and clear direction of purpose, each point building on the proposition. Thoughts are not disjointed but directly support the argument. | ? |
| Conclusion  /10 | Definite, purposeful, sufficiently climactic, not just a rehash or summary of content but a pressing of the proposition. | Learning algorithm? |
| Addresses experience  /15 | Effectively aims at hearts of hearers. Personalizes the truths. Shows truth as relevant to life | ? |