A Prompt Template

For consistency, we used a uniform structured prompt across all models. This prompt was iteratively refined to ensure clear task understanding and accurate multi-label classifications across four impact dimensions. Below, we present the template used for each topic pair instance, with placeholders `{topic_1}`, `{topic_2}`, `{shared_concepts}`, and `{full_platform_lines}` replaced accordingly.

```
You are an expert in research impact analysis. Your task is to
↪   assess the impact of a pair of research topics based on
↪   structured evidence of platform co-mentions and shared
↪   concepts.

This is a multi-label classification problem. Your goal is to
↪   classify all impact stages as either supported or not, based
↪   on the strength and relevance of the evidence for each stage.

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Impact Stages:

- Reach: Broad dissemination of research to general audiences via
↪   mass communication platforms (e.g., Twitter, Facebook,
↪   Wikipedia).
- Engagement: Active interaction, discussion, or interpretation of
↪   research in community-driven forums (e.g., Blogs, Reddit,
↪   YouTube, Mendeley).
- Feedback: Scholarly reactions or critical appraisals, often
↪   indicating academic interest (e.g., Peer Review).
- Influence: Contribution to discourse in authoritative contexts
↪   (e.g., citations via CrossRef, media coverage via News).
- Outcome: Tangible societal or technological effects arising from
↪   research (e.g., Policy documents, Patents).

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Important Notes:

- Platform values are normalised per platform and impact dimension
↪   at the topic level (0.0 = no evidence, 1.0 = maximum
↪   evidence). For topic pairs, scores are summed (range: 0.0-2.0)
↪   to reflect combined impact.
- Classify all impact stages with meaningful or emerging support,
↪   considering the total cumulative evidence across platforms,
↪   even if individual platform scores are low.
```

- Err slightly on the side of inclusiveness: if multiple signals
↪   exist across platforms, prefer assigning the stage rather than
↪   omitting it.
- If cumulative evidence across all platforms for a stage is
↪   strictly zero, assign only the "Reach" stage.

Now classify this pair:

- Topic 1: {tA}
- Topic 2: {tB}
- Shared Concepts: {shared_concepts}

Platform Co-mention Evidence (normalised values):
{full_platform_lines}

You must begin your output exactly with:

Impact Stages with Sufficient Support: [list of stages]

Followed by:

Impact Summary:
Write a concise (2-4 sentence) summary explaining the evidence for
↪   each assigned impact stage. Mention the key platforms and
↪   shared concepts that support each stage. Highlight how
↪   cumulative evidence across platforms contributed to
↪   classification, even if individual signals are small.