

Report & Portfolio Development

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Entry TC-004 — YouTube: Dr. Alianna J. Maren

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Curator	Dr. Alianna J. Maren / Claude (Anthropic) — see Assessment below
Themesis Cross-Reference	Primary source for AI Portfolio Coach Gate 3 (Introduction / Problem Statement). Abstract revision companion task introduced here — cross-reference to TC-005 (Abstract). Playlist index 9.

Curator's Assessment

This assessment was developed collaboratively by Dr. Alianna J. Maren and Claude (Anthropic) on March 5, 2026, in the context of building the Themesis Report & Portfolio Development repository. It represents an informed but not exhaustive reading of the transcript and should be updated as the repository evolves.

"The way to do your problem statement is: make your first draft early — it can be drunk, it can be purely just to get words down on the paper that you will throw away later. Then, as often as you can throughout the quarter, go back and revisit your problem statement."

What This Video Gets Exactly Right

This video addresses what Dr. Maren identifies — correctly — as the hardest single writing task in the entire research paper: getting clarity on the problem you are actually solving. The framing is immediately credible because it is grounded in personal experience. Dr. Maren does not describe the difficulty of problem statement writing abstractly — she describes her own current experience revising a problem statement for an IEEE TPAMI submission, rewriting it multiple times over several months, and still not being fully satisfied. That kind of intellectual honesty from an experienced researcher is rare and valuable. It tells students: this is hard for everyone, not because you are underprepared, but because precision in problem formulation is genuinely difficult work.

The opening diagnosis is sharp and accurate: students typically excel at the algorithmic and technical execution of their projects — finding data, running code, producing results — but struggle to articulate what problem they are actually solving and why it matters. This asymmetry is real and well-observed. Most research writing guidance focuses on structure and style; this video focuses on the conceptual clarity that must precede structure. That is the correct priority.

The iterative revision framework is exactly right. Dr. Maren's instruction to make a first draft early — explicitly permitting it to be rough, placeholder-level writing — and then return to it repeatedly as the project develops is the correct process for problem statement writing. A problem statement written before results are obtained is necessarily provisional. The problem as understood at the beginning of a project is almost never the problem as understood at the end. Students who treat their first draft as final produce problem statements that describe where they started, not where they arrived.

The specific list of things to revisit the problem statement against — the data actually obtained, the algorithms used, the results achieved, the analysis performed, the fine-tuning required — is practically actionable in a way that generic 'keep revising' advice is not. It gives students a concrete checklist for each revisit cycle.

The connection between the problem statement and the abstract is well-placed and important: the abstract's first sentence must grab the reader and get them focused on the problem immediately. This cross-reference belongs in Gate 3 coaching conversations — the problem statement and the abstract are not separate tasks, they are the same task at different levels of compression.

Where Additional Nuance Is Warranted

The video does not address the structural relationship between the problem statement and the Introduction section as a whole. In Dr. Maren's report structure, the Introduction contextualizes the problem statement — it provides the broader field context that motivates why this specific problem matters. Gate 3 Facilitator Notes should make this relationship explicit: the Introduction is the container; the problem statement is the core.

The video also does not address the specific challenge of scoping — students who write problem statements that are either too broad (assessing an entire field rather than a specific application) or too narrow (describing their exact dataset and algorithms rather than the class of problem being addressed). Dr. Maren hints at this with the observation that students are 'not trying to assess a couple of algorithms for the entire space of NLP' — but the scoping guidance could be developed further in Gate 3 coaching conversations.

The 'drunk draft' permission is well-intentioned and pedagogically sound, but some students may take it as license to leave the problem statement underdeveloped for too long. Gate 3 should establish a clear expectation: a rough first draft is the starting point, not a resting point. By Gate 3, the student should have a draft they are willing to read aloud and defend.

Relevance to the AI Portfolio Coach Gate Framework

TC-004 is the primary source for Gate 3 (Introduction / Problem Statement). Its key contributions to the repository are:

- The iterative revision framework — first draft early, revisit repeatedly against data, algorithms, results, and analysis — as the operating process for problem statement development throughout the quarter.
- The diagnosis of the core difficulty: technical execution is rarely the problem; conceptual clarity about what problem is being solved is the hard part. Gate 3 coaching should open with this framing to normalize the struggle students are experiencing.
- The connection between problem statement precision and abstract construction — the first sentence of the abstract must focus the reader on the problem immediately. This is the bridge between Gate 3 and the Abstract companion task.
- The 'hitting the nail sideways' metaphor — a problem statement that is important but tangential to the main thrust of the work. This is a specific and recognizable failure mode that Claude should watch for in Gate 3 sessions.
- The distinctiveness question: what makes this student's work stand out from others doing similar projects? This is the professional identity dimension of the problem statement, connecting Gate 3 back to the professional framing established in Gate 2.

CURATOR'S NOTE — Update trigger: *This entry should be reviewed if the report structure requirements for MSDS courses are updated, or if the Gate 3 framework is significantly revised. The core problem statement guidance is durable. The specific course context (NLP, deep learning,*

capstone) reflects the 2022 course offerings and should be checked against current course offerings if the repository is extended to other programs.

Full Transcript

Transcript captured from YouTube auto-captions. Timestamp markers preserved. Minor punctuation added for readability. Source: <https://www.youtube.com/watch?v=dxF1PVW77Z4>

Introduction — Context and Audience [0:01]

Hello, this is Dr. Alianna J. Maren. You're joining me in a series that I'm privately offering on my own YouTube channel, and it's dominantly geared for students who are in my classes at Northwestern University in the Master of Science and Data Science program, Artificial Intelligence specialization, where I've evolved and I'm teaching three different classes: Natural Language Processing, Deep Learning and Artificial Intelligence, and the Capstone class. So you could be in any of these three — or you're doing your own work and this could be relevant to your writing your reports.

The Core Challenge — Why the Problem Statement Is the Hardest Thing [0:36]

So we're going to talk today about the problem statement. This is the toughest thing. Now one of the things that I'm finding is that people are doing a fabulous job of the algorithmic end of things — I rarely have to make a commentary or correction. Most people are doing really awesome, amazing work. They understand the algorithms, they can run the code, they can find new pieces of code and incorporate them. They're either finding a decent data set or they're curating and collecting their own data set, which is a huge job. Magnificent work — I almost never have to talk about that with them. Where it's tricky, where it's hard, is writing your problem statement. So it's the putting down on paper what it is that you're really doing — and this is so much harder than you would think.

The Scoping Problem — Specific, Not General [1:23]

Because you're likely used to writing up proportions like: algorithm, this data, that results, here's some graphs, here's some charts and figures, here's my analysis and interpretation. It's really the hardest thing to get clarity on the problem that you're solving — because you're not super open-ended. You're not trying to assess a couple of algorithms in Natural Language Processing, for example, for the entire space of NLP applications. You're typically dealing with a very precise corpus and a couple of well-chosen algorithms — maybe in tiers, so that you're looking at this versus that, and then another this versus that — but it's very specifically focused within a specific problem domain. So your job is to get clarity on the fact that you're using certain kinds of data, certain sources which have unique characteristics defining them. So your data source could be entirely different from somebody else's — therefore your algorithms that perform best could be different from somebody else's — and the list goes on. So you need clarity on what it is that you're going to do.

Personal Example — Rewriting for IEEE TPAMI [2:39]

As a recent example: I'm writing a paper right now that I hope to submit to IEEE Transactions on Pattern Analysis and Machine Intelligence — that's IEEE TPAMI. I wrote an intro, a problem statement, earlier, a few months ago. And then I went back to it a few weeks ago and said, 'Oh my god, it's really kind of...' and I rewrote it. And then just very recently I picked it up again and looked and said, 'You know, it's not so bad — but it's not hitting the nail precisely on the head. It's hitting it more like sideways. It's an important point but it's slightly tangential to the main thrust.' And I rewrote it again. I may wind up rewriting it again. And I'm a pretty good writer — I've been holding this skill set for all my professional life. So I tend to forget how hard it can be — either until I see your work and it's like, 'Oh wow, they're having a hard time expressing exactly what the problem is,' or I'm writing again and I'm saying, 'Wow, I just didn't get it.'

The Iterative Process — Draft Early, Revise Often [3:44]

So the way to do your problem statement is: you make your first draft early. It can be rough — it can be purely just to get words down on the paper that you will throw away later. Then, as often as you can throughout the quarter, you go back and you revisit your problem statement. You look at it in light of what you're doing: in light of the data that you've actually got and how it's worked out, what you're seeing about other data sources; in light of the algorithms that you're using; in light of the results that you're getting; in light of the finessing and fine-tuning that you've had to do; in light of what your analysis and interpretations brought to mind — causing you to go all the way back and reconsider what the problem was that you really are addressing; and perhaps some slight uniqueness to what you're doing that makes your work distinctive or stand-out-able with regard to the many other people who are doing similar or even the same project in NLP. And I was just using Natural Language Processing as an example — you could be doing something in the deep learning architecture, you can be doing a Capstone project totally of your own invention, using any kind of algorithms appropriate to you.

The Abstract Connection — First Sentence Must Grab [4:56]

Go back, revisit your problem statement often, rewrite often, keep refining. It is the one key thing in your paper that will take the most time, attention, and scratching your head every so often. And then also, as you do that, go back and revisit your abstract — because your abstract has to be tight. You have to get your readership focused on what the problem is that you're doing right away. First thing — first sentence — has got to grab them and get them focused on whether or not they're going to read your paper. And then you can expand a little bit in your abstract on data, methods, results, analysis, and interpretation — one sentence each. There's no room in your abstract for setting the broad context — that goes into your introduction and it cues up your problem statement.

Closing [5:45]

Thanks for watching. I'll look forward to seeing you again soon. Have a great day.