

First Prize Winner (tied)

The Intern's Intern: AI's Role in Developing Early-Career Actuaries

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INTRODUCTION

One June morning, my inbox lit up with a subject line from the Python Quants newsletter: “The A.I. Job Apocalypse May Already Be Here — NYT Warns Finance Grads.”¹ Pretty dramatic, I thought, and clicked. The linked NYT post declared a spike in unemployment among recent grads as firms swap out junior staff for AI algorithms. Oxford Economics corroborated the claim citing the decline in intern hiring as “signs that entry-level positions are being displaced by AI at higher rates.”^{2,3}

As a new actuarial intern, this triggered a very specific anxiety. For the most part, the pathway into the actuarial field had always felt reassuringly formulaic: at least two exams, a solid GPA and decent Excel skills were enough to land an entry-level role. But with the increasing adoption of AI in pricing, valuation, reserving, and data analysis, that once-reliable checklist has grown fragile. Hearing senior actuaries insist that “judgment” will keep actuaries indispensable, I couldn’t help but think – judgment is precisely what early-career candidates haven’t had time to cultivate! The risk then, at least on paper, is that AI could optimize entry-level roles out of existence in the name of efficiency.

However, over the course of my internship, I discovered a far more nuanced reality. While AI could perform amazing feats—like generating functional code in the time it took me to sip my coffee—I was still responsible for reviewing every line for sound logic and reasonability. Ultimately, it was my work and my professional reputation on the line. By summer’s end, I realized AI doesn’t erase entry-level actuarial work; it reshapes it. AI accelerates output but demands rigorous oversight, much like managing a brilliant but overzealous intern. The required skillset for early-career actuaries now expands beyond manual execution to careful auditing, ethical validation, and the crucial ability to translate and explain AI’s output.

This essay recounts that journey of transformation. I explore my shift from a task executor to an AI overseer through the lens of a monstrous pricing workbook that initially overwhelmed me, my digital intern’s ‘fix’ that introduced unseen risks, and the audit toolkit I built to ensure future interns could learn

¹ Roose, K. (2025, May 30). *For some recent graduates, the A.I. job apocalypse may already be here*. The New York Times.
<https://www.nytimes.com/2025/05/30/technology/ai-jobs-college-graduates.html>

² Martin, M. (2025, May 27). *Educated but unemployed: A rising reality for US college grads*. Oxford Economics.
<https://www.oxfordeconomics.com/resource/educated-but-unemployed-a-rising-reality-for-us-college-grads/>

³ Boney, L. (2025, June 12). *AI and jobs part 1: The (job) sky is falling. No, seriously.* Boneconnector.
<https://www.boneconnector.com/writings/work-ai-entrylevel>

faster and safer. I'll also share the lessons learned, and how these experiences are fundamentally changing the skill requirements for the next generation of actuaries.

By sharing my stumbles, breakthroughs, and hard-won skills, my goal is to help fellow early-career actuaries learn to effectively guide and govern their own brilliant but overzealous digital interns, turning AI from rival to ally.

THE WORKBOOK THAT NEARLY BROKE ME

It began, as I imagine potential actuarial disasters often do, with an innocent looking spreadsheet. "Review the group life pricing workbook, then build a simpler version," my manager said. Sounds simple enough, I thought. Cut the fluff, streamline the logic—done by lunch.

But within minutes, my confidence disappeared. With over 60 tabs, a computation sheet with columns approaching ZZ and several user-defined functions requiring I parse through multiple lines of VBA code, I realized why veterans here called it a monster. My task wasn't simplification—it now seemed more like reverse-engineering a black box. Recognizing the arduous tasks before me, I asked my manager "Where do I even start?" She smiled faintly and said, "With the end in mind...welcome to the team."

A couple of weeks later, after reading life pricing manuals provided by my manager, reviewing appendices and the workbook's documentation (a Godsend) meticulously, I was able to trace the convoluted cell dependencies and understand the logic. I felt a surge of pride; I had tamed the monster and now had a better grasp of the workbook. Emboldened by this understanding, I turned to the next phase: building a simpler version. This, I thought, was a perfect task for AI.

AI'S ATTEMPT TO ASSIST

Armed with my notes, I asked myself: having done the grunt work, could AI now build the model end-to-end? With access to the enterprise AI tool, I shared the detailed notes made throughout the review phase and guided it with well-thought-out prompts. Then, I watched as it churned out the results, relief washing over me...until I noticed something was very wrong. Some factors I had earlier earmarked for reasonability checks looked nonsensical. AI had hallucinated factors, generating them seemingly out of thin air, while assuring me they reflected "industry best practice." Worse, it ignored some of my prompts entirely, creating outputs that looked authoritative but fell apart under scrutiny.

The experience was like working with an overconfident intern who nods eagerly, produces results fast, but slips in errors that could prove disastrous. After hours of corrections, I concluded it would be faster to build the model myself from scratch rather than hoping AI would be able to build the model end-to-end. From my perspective then, AI had failed as a junior actuary.

EXCEL AUDIT TOOL

Having successfully built the model and validated its results with a couple of known cases, I circled back to the initial monster of a workbook. "How could I help future interns or new pricing actuaries to quickly grasp the workbook?" Working with Excel's built-in Formula Auditing was time consuming. If AI could not yet replace my judgment (under my manager's guidance) in pricing, maybe it could help me (and future interns) see complex logic more clearly.

The solution, I realized, was to map the workbook's logic visually. I conceived a plan to represent it as a network graph with cells, tables and named ranges as nodes and the formulas as edges. I then tasked our

enterprise AI with a clear mission: to take my concept and initial Python code and build a robust, interactive application with the following functionalities:

- Identify all formulas (built-in and user-defined) in the workbook.
- View the entire workbook structure as an interactive network.
- Click on a node to trace its lineage, highlighting precedents and dependents throughout the network.
- Flag poor modelling practices such as hardcoded cells or circular references.
- Allow searching for a specific cell, table or named range to quickly identify downstream impact should those values be omitted or changed.
- Allow the download of a detailed lineage map for a selected node.

For this task, AI was stellar! With a few adjustments to refine logic flows, it created a working application (see Figures 1 and 2) that let me upload any workbook, explore its logic visually, and trace dependencies instantly. This tool could now demystify the monstrous pricing workbook, facilitating clear comprehension of the logic and flow of computations. The application allows complex formulas with numerous cell references to be easily identified, audited on a need-to-include basis, and simplified if necessary. If AI had failed as an entry-level actuary, it thrived as a software engineer specialist.

Figure 1
FULL NETWORK GRAPH OF A SAMPLE WORKBOOK

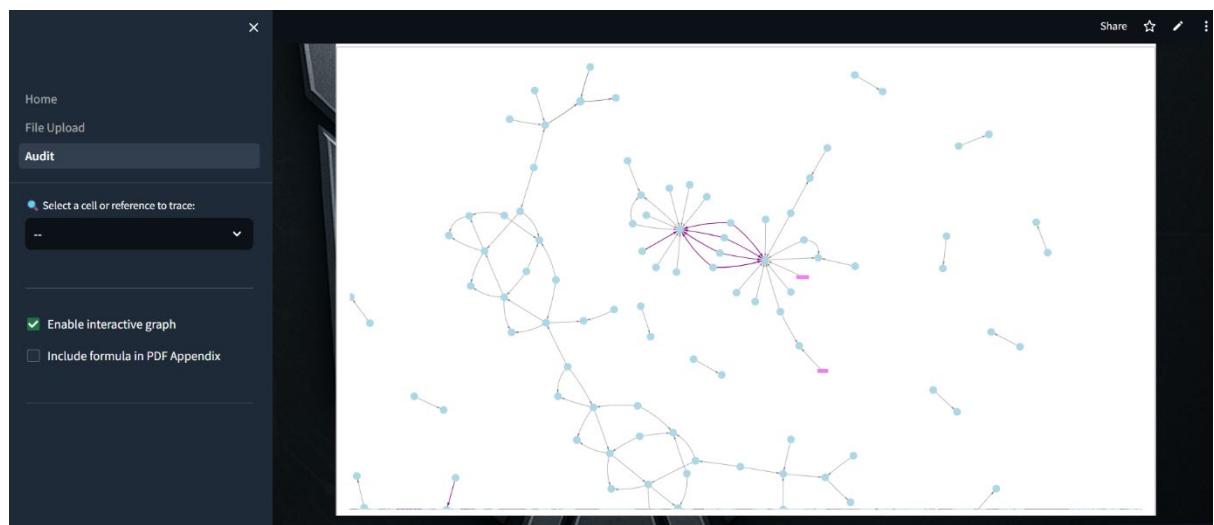
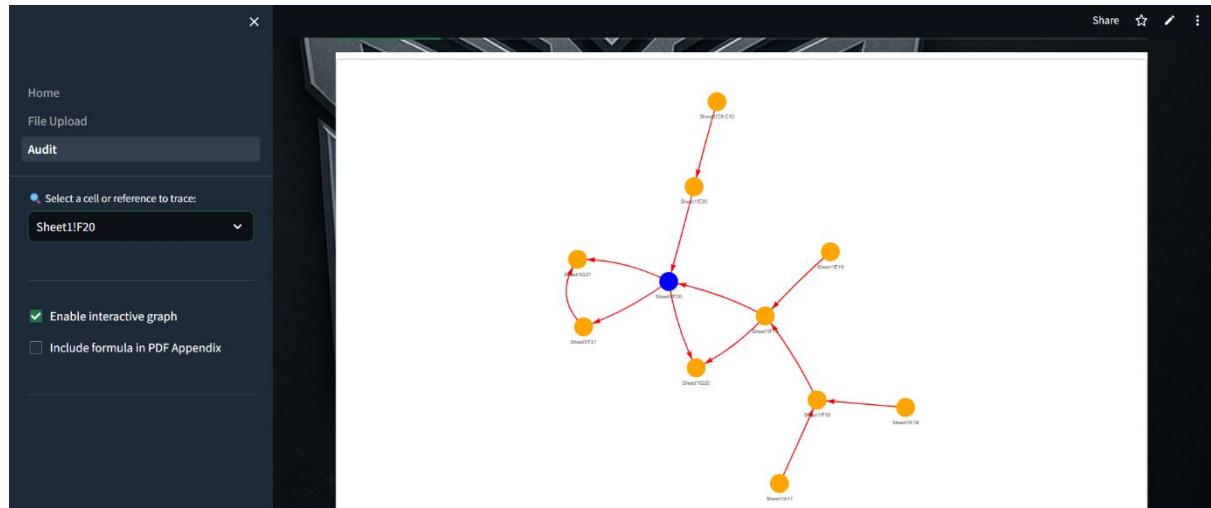


Figure 2
NETWORK GRAPH SHOWING SELECTED CELL LINEAGE



LESSONS FROM HAVING A DIGITAL INTERN

My summer with AI taught me that it is a specialist, not a generalist (at least not yet). It was unable to build a sound pricing model, a task requiring actuarial judgment, but excelled as a software engineer, building a complex application to my exact specifications. That duality defined my summer and has tempered my expectations of AI.

The core lesson crystallized into a question I was forced to ask myself: "When AI writes my code, am I learning to code, or am I learning to audit code?" The answer, I believe, is defining our profession's future. The technical skill requirement for aspiring actuaries has expanded beyond Excel and VBA. It now includes proficiency in programming languages like Python, to make sense of AI-generated code and validate its logic. This then naturally leads to pivoting from manual creation to expert validation, i.e., from writing VBA, Python, or SQL code from scratch to architecting and governing AI systems.

This experience led me to a more uncomfortable question: by building a tool to automate my most arduous task, am I robbing future interns of the deep understanding I gained? Perhaps. But more importantly, I am freeing them from the drudgery. This tool shifts the value proposition of an entry-level actuary. It allows the next intern to move faster than I ever could, not to skip the learning, but to accelerate it. They can now focus sooner on the bigger picture: questioning the model's assumptions, improving its logic, and innovating—the higher-order thinking that AI cannot replicate.

CONCLUSION

The actuarial profession has always trained judgment through repetition of technical tasks. AI changes that apprenticeship. Now, the entry-level actuary's most important contribution is not the speed of their fingers in Excel, but the sharpness of their mind in questioning, validating, and governing outputs. This transformation mirrors the profession's evolution. Senior actuaries once validated the spreadsheets of juniors. Now, junior actuaries are the first line of defense, validating the output of our digital interns. My experience proved that AI did not erase my value—it forced me to become a better actuary faster. And that, I believe, is the real future of our profession.

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