Life Lessons from AI

Andrew Forney

Introduction

Firstly, I'd just like to say how great it is to be back at the SWE Banquet, and thank our gracious hosts, the Society for Women Engineers and Tau Beta Pi, let's get some applause for their hard work <pause>… and thank *you* all for the nomination to speak today—a choice you'll likely regret in the coming minutes, because I'd like to also say what a proud bird *I* am of all of you to have *flown* through the challenges of the pandemic, the *migration* back to campus, and who are now ready to spread your *wings* in the wild blue yonder. [0:34]

Those of you who don't know me, I'm Andrew Forney, I teach one of the artificial intelligence tracks in the Computer Science department, and if it's one thing we're all probably sick of after this year: it's AI. You can't look anywhere without ChatGPT showing up in your face—perhaps it's the one who wrote this speech—but these systems fundamentally work by learning from examples of us as humans, so today, for your last lecture, I've decided to turn things on their head and ask: what life lessons can *we* learn from *AI*? [1:10]

This first tip will likely be relevant to many of you just beginning or finding your careers, and is good advice whether you are human or bot, and that is to:

Explore Before You Exploit

Put simply: you'll never know if you're making the best decisions until you've sampled the alternatives—and post grad, it can be very easy to fall into ruts both personally and professionally. Try that new restaurant that just opened, finally get out from behind your desk—heck, maybe us STEM grads *are* actually morning people after all—you'll never know until you try, learn, or explore your options.

The same applies to your choice in careers or what you do in your careers. As a grad student, I never knew I'd want to teach until I became a TA and got addicted to the spotlight and captive audience—so thanks again for tonight (enablers).

Volunteer for the tasks outside of your comfort zones, join a side project that isn't precisely in your wheelhouse—because sometimes a new passion is waiting to be found along the path unchosen. [2:18]

So how do you know you've chosen the right path? Well, you have to:

Know Your Reward Functions

For us humans, rewards are what get the old dopamine flowing, i.e., the signals in your life that make you happy and fulfilled. The value you get from life need not be tied to only your title or paycheck, but perhaps also to how many people you are able to help, teach, or make groan through cringey wordplay.

Because when you are just beginning your post-grad life, it's often simplest to adopt the cliché rewards readily inherited from society: get a good job, buy a nice house, start a family, and as soon as possible too—and it's fine if those objectives align with your values! But my advice is: don't feel like anyone else's reward signals *have* to be yours too; feel free to choose or embrace the goals that make you excited to wake up each morning and pursue them… unless your goals are still to catch them all in Pokémon Go, check a calendar, it's 2023. [3:29]

That said, how do we find these goals?

Have an Admissible Heuristic

Now heuristics are guidelines or rules of thumb that accelerate Search operations that find the steps from some initial state to a goal, traditionally like navigating a maze or… planning your future. During this search to find or set goals, it's useful to have a good compass, but *inadmissible* heuristics can lead us astray if they *overestimate* the cost or effort to some goal.

Put into context: it's easy to feel like that app or invention you have in mind is too distant to achieve given your time, experience, or other resources—I get it! But it pays to remind yourself that progress does not need to happen overnight. Put some time in your calendar to work on your passions, and remember one of the central rules of programming: take a large task and try to break it into smaller pieces.

Stardew Valley was a game made entirely by one person, Eric Barone, after he failed to acquire industry jobs after graduation and wanted to gain programming practice while he worked as a theater usher. Over the course of close to 4 years, his game was released and has since sold over 20 million copies.

Don't listen to the voice that tells you something will be difficult if it's a goal you'll find rewarding. Sometimes this might mean occasionally reflecting on your priorities and expanding your horizons, leading to my next tip: [5:10]

Don't Overfit

Not a critique against bodybuilders, but rather, that pesky habit of many machine learning models that too closely resemble how they were trained and fail to generalize to experiences they haven't yet seen. Your degree represents the *beginning* of your journey as lifelong learners, not the end—which is especially true as scientists and engineers, wherein the landscapes of our fields can change daily.

As many of your professors have reminded you in that section at the end of the syllabus that no one reads: your classes have been but the tip of the iceberg that is the sum of knowledge in your field. Consequently, remember that you are not *limited by* your degree or the traditional paths it puts you on—your degree is a vehicle that can deliver you to new destinations; it is *not* the road that *must* be followed.

Speaking of roads, the originators of Google Maps were previously gas station attendants and textile workers before their startup was acquired by the tech giant—talk about a *detour* <pause dramatically>. The future is likewise interdisciplinary, with healthcare engineering companies fitting robotic prosthetics that are empowered by machine learning, or the bioinformatics in our smartwatches that enable us to ignore their incessant pleas to get up and move.

The point is to remember that with graduation come the tools with which you will *start* building your masterpieces, and the rest you are now prepared to acquire on your own… but when life doesn't precisely follow the blueprint, remember:

The Markov Property: The Past is Independent of the Future Given the Present

Wow. Sounds like some profound bullshit you'd see on an Instagram post with transparent Helvetica draped across a generic sunset, but the lesson's much better: it doesn't matter how you got here, it only matters what you do next.

We are not in control of our pasts, nor should we let mistakes haunt us: we should learn from them and progress, remembering that regrets are not to be feared, but celebrated for the changes they bring to improve ourselves. Your programs will have bugs, your robots will stumble, your concrete will crack (well actually I don't know about that, it's a hardware problem) but we are scientists who know that, in the words of a great song, "Win or lose, it's just a lesson learned." [7:51]

Alright, we're at 5 lessons now, and that means my time is almost up, assuming I budgeted the right amount of time for laughter, so by now you're likely aware that this lecture is a typical pre-graduation pseudo-intellectual fortune-cookie list of advice… but, to my credit, it *is* themed. Apropos, we're left with the final lesson not necessarily *from* AI, but how to distinguish ourselves from it. And that tip:

Don't Be a Mimic

Even if you are not yet fully confident in your awesome potential, remember that no one has seen the world quite like you have, and that your perspective is perhaps even more valuable than the skills you *currently* have, which will continue to grow as you do. This week marks your graduation from imitating the experts to becoming them, so no matter where your path takes you, always remember to leverage your uniqueness, see a problem from *your* angle, as well as others', but feel free to disagree.

Become someone that ChatGPT will someday mimic.

Congratulations Class of 2023, thank you! [9:07]