

Nathan Smith

TECM 5280 portfolio

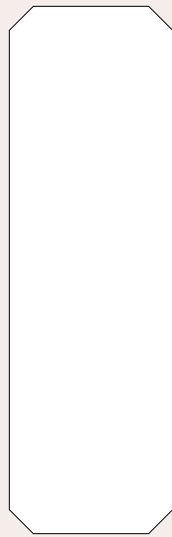
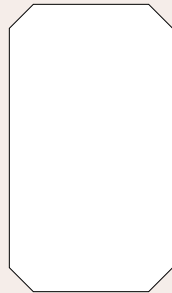
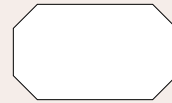
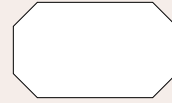
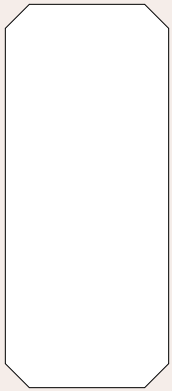
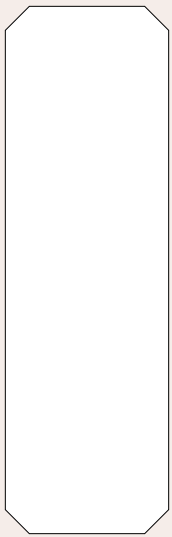
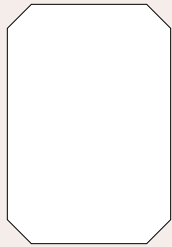
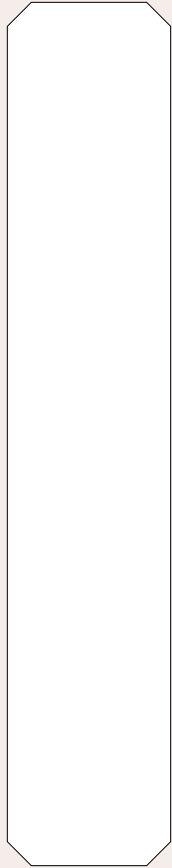
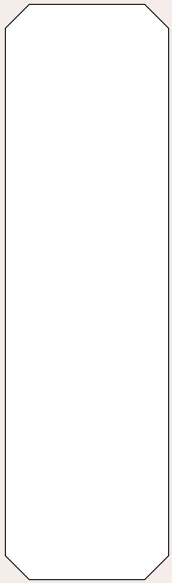
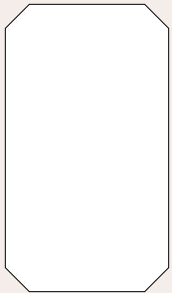
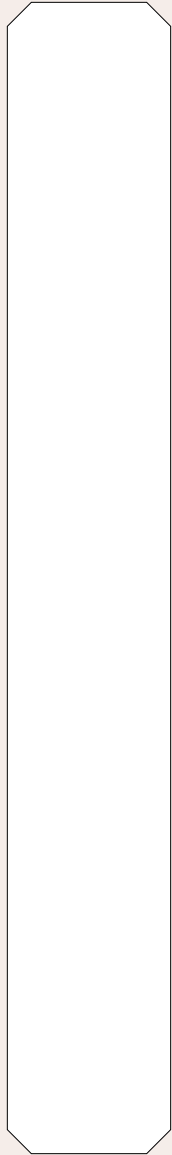
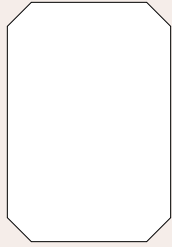
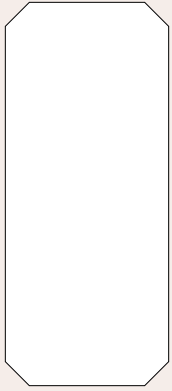
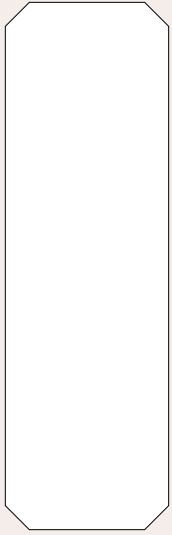


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Note: The cover page "N&S" logo was created in Figma. Unless otherwise stated, all portfolio pieces were made using Adobe InDesign.

Hello reader!

Thanks for taking the time to read more about me. My name is Nathan Smith.

At the time of this writing, I am a principal software engineer at Microsoft. I work on a small incubation team within a larger organization called the Office of the CTO, or "OCTO" for short.

On any given day, I might be:

- Doing UX testing with coworkers, playing multiplayer games within Microsoft Teams.
- Debugging said games, as I am one of the developers responsible for building them.
- Partnering with the Microsoft [Bonsai](#) folks to teach AI "brains" to play our games.
- Staring at my screen, wondering why my code is not working. (Usually due to a silly typo.)

I am currently enrolled as a part-time graduate student at the University of North Texas, pursuing an MA in interaction design.

I also hold an MDiv ([master of divinity](#)) from Asbury Theological Seminary, and a BA in social sciences from Washington State University.

I know just enough to realize that I will never know it all.

I have learned to be okay with that.

My résumé

If you are curious about my full work history, feel free to read through my [LinkedIn](#) profile.

Microsoft

Jun 2021 – Present
Principal software engineer

Reaktiv Studios

Dec 2019 – May 2021
Lead front-end developer

InVision

Oct 2018 – Oct 2019
Lead software engineer

TandemSeven (Genpact)

Jun 2014 – Oct 2018
Principal front-end architect

projekt202

Feb 2012 – Jun 2014
Principal UI architect

Pure Charity

Oct 2011 – Feb 2012
Front-end developer

Writing

I have coauthored a few programming books, and tech edited several others. Due to the pace of the industry, they are now out of date. More info is listed on my [site](#).

More recently, I wrote two in-depth technical articles. Both of these are still current.

- [CSS Tricks](#) – [Anatomy of a tablist component in vanilla JavaScript versus React](#)
- [Smashing Magazine](#) – [CTA Modal: How to build a web component](#)

Speaking

I have spoken at a number of conferences and local venues, some of which are listed here.

- Adobe MAX
- Art Institute of Dallas
- BibleTech Conference
- Big Design Conference
- DSVC
- Design 4 Drupal at MIT
- Drupal Camp Austin
- Drupal Camp Dallas
- DrupalCon Chicago 2011
- Dynamic Church Conference
- Echo Conference
- Gospelcon
- M2LIVE
- Red Dirt JS
- Refresh Dallas
- Refresh OKC
- SXSW Interactive
- Think Vitamin
- Webmaster Jam Session

The Interaction Design Herald asks: “What is interaction design?”

This document is a faux metropolitan newspaper style layout, discussing the merits of interaction design. Like any powerful tool, it must be wielded responsibly. One of the biggest issues facing our country today is that of polarization due to differing perceptions of reality.

Increasingly, we are attempting to lob soundbite sized insults at those with whom we disagree. The various social media companies amplify this echo chamber by repeatedly surfacing negative content that gets the most engagement. This psychological hack ends up creating a somewhat inescapable feedback loop, until gradually we begin to treat those who are different than us as the “other.”

It is my hope that through principled, ethical use of interaction design we can eventually undo some of the damage that has been done in the [past 10+ years](#) and get back to seeing one another as human. I touched on that in my brief diatribe within this fictional newspaper.

Design details

I made this in [Figma](#) for a different class. I later recreated the document with [InDesign](#) after learning how to use it. In terms of visuals, here is a breakdown of some interesting aspects.

- The newspaper title is set in the [Chomsky](#) typeface — which is freely available and is modeled after the New York Times — and the body uses [Palatino](#).
- Top left: I tried to do a riff on “All the news that’s fit to print” with the phrase “All the skeus that’s fit to morph.” This is a silly nod to the rise (and fall) of [skeuomorphism](#) in software UI design. Early versions iOS were especially heavy on textures and realism.
- Top right: I needed some filler text, so I made a little joke about qualitative versus quantitative research. One of the things we learned in the UNT interaction design program is that insights can be gleaned by employing both methods.
- Bottom right: I ranted a bit about Google’s Material Design, because I feel that it went too far in the other direction — away from skeuomorphism — and removed a lot of the UI hints (aka “affordances”) that users had come to rely on.

“All the skeus
that’s fit to
morph.”

The Interaction Design Herald

Qual versus
Quant...
Try both!

NATHAN SMITH

UNIVERSITY OF NORTH TEXAS – FRISCO, TX – SPRING 2022

TECM 5280

Heads up! Designers can help users accomplish their goals.

Fluidity of User Accomplishment Facilitated by Interaction Design

Design is sometimes equated with art. While it can certainly be appreciated as such, it is also so much more. Art within a gallery is often labeled “do not touch,” whereas design is intended to be used.

Good design is invisible. It is like air conditioning. We really only tend to notice when it is not working as expected. Too hot? Too cold? Something is awry. As such, design often goes unnoticed.

I tend to think of interaction design — when done well — as an “alley oop.” A user wants to accomplish a goal, and a designer can help to facilitate it.

“Move Fast and Break Things” — What Comes Next in Design Ethics?

In terms of the ability to influence our thinking, design is incredibly effective.

Some would argue, too much so. In an era of dark patterns and manipulative psychological tricks, how do we take a step back from the endorphin rush of doom-scrolling?

It has been said that we reap what we sow. Decades of focus on STEM — often to the exclusion of the “soft skill” subjects like arts and humanities — gave rise to machine learning. In recent years, we have weaponized tailored news feeds against one another

We did so to extract business value, but at what cost? We must account for the human aspect of what we are creating. Can users be blamed for

believing disinformation, when an algorithm has determined with a high degree of certainty that is what they actually want to read?

This creates a moral gray area. Taken at an aggregate level — across all the designers and developers who have worked on a complex system — the individual responsibility for each person involved approaches an infinitesimally significant proportion.

Still, the problem remains. Who then, bears the burden of breaking the feedback loop: the creators, or the consumers? At its best, interaction design should be:

- A cooperative partnership
- Conversational and approachable
- Not adversarial, nor deceptive

Moving forward, I predict that we will come to expect more of those who create. A holistic view of design will involve not only understanding what makes users tick (and click!), but an accountability of how we wield such knowledge.

The future can be better. Let’s make it so.

Who Moved My Cheese? aka: The Ebb and Flow of Skeuomorphism

People are creatures of habit. We often conflate familiarity with superiority. Woe to any designer who makes UI changes, justified or not.

Yet some changes seem to go objectively too far. For instance, removing affordances from inputs.

iOS originally leaned towards realism. But more recently, mobile operating systems are trending minimalist.

Google’s Material Design initially made no visual distinction between a single or multi-line text input. Both appeared as a label and a line.

If everything is important, nothing is important. True. But also... If nothing is important, nothing is important.

Good design provides signifiers, so that a user does not feel unmoored.

Designing verbs: descend & investigate



In this exercise, I tried to make the word “descend” seem as if it was going down into a dark stairwell and fading into the dark.

Also, I ran the word “investigate” through an anagram generator and was going for a detective theme. Eerily, the phrase “it avenges it” emerged and I thought that made for an interesting and foreboding halfway point.

Designing an emotion: optimistic



For this piece, I was going for a sort of “tech start-up” feel. Or perhaps it could be an architectural firm focused on sustainable buildings.

Overall, I wanted it to seem airy and carefree. There is a faint outline of another building silhouette in the background, between the columns of text. It could signify unrealized future possibilities.

Designing an emotion: anxious



Using around 500 words of filler text, I tried to design a page that would exude a feeling of alertness and excitement.

I could envision this sort of signage in a factory and/or advertising some underground rave at a skate park.

Long document sample pages

This exercise involved redesigning an employee handbook for the intramural sports department of [Western Colorado University](#). The school is located near the Rocky Mountains in Gunnison, CO.

- It was interesting to see how the original content was laid out, and I tried to do it justice in my revamp. I attempted to improve upon the flow and readability.
- I aimed for an open-ended feel on the cover, where the multipurpose field could be used for any number of sports.
- Throughout the document, I incorporated official photos of the campus architecture and beautiful landscape.



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MISSION STATEMENT

The mission of the Western Colorado University intramural sports program is:

- To provide students with the opportunity to participate in a variety of competitive recreational sports in a safe environment.
- We aim to provide quality service and facilities.
- It is our goal to promote healthy lifestyles and wellness.



About the program

The intramural sports program is one of the most popular student activities at Western Colorado University. The program is dedicated to providing all students — regardless of age, gender, skill level, or experience — opportunities to participate in recreational events in a fun and safe environment while promoting physical fitness and competition, social interaction and student involvement.

Annually, the program offers a wide range of team, dual, and individual leagues and tournaments designed to meet the needs and interests of the diverse campus population. Activities offered include flag football, co-rec softball, men's basketball, women's basketball, indoor volleyball, indoor soccer, billiards, horseshoes, dodge ball, softball, floor hockey, ultimate Frisbee, and much more.

Intramural sports is a structured program that allows Western students to participate in organized team competitions right here on campus. These sports provide a great opportunity for physical activity while promoting wellness, healthy competition and friendship. Participation is not required, and an individual does not have to be highly skilled to participate. Activity and participation are for all who are interested.

Work study contracts

All hired employees must have a work contract prior to beginning work for WSCU intramural sports program. Work contracts can be found online through the MyWSCU website.

The employee must:

- Fill out their portion of the contract.
- Bring the contract to the intramural sports director to fill out.
- Take the completed contract to the financial aid office in Taylor.

After this has been accomplished, a time card for that employee will be sent to the intramural sports office and the employee is ready to begin working for the intramural sports department.

Time cards

All employees at WSCU intramural sports must have a blue time card for their job position. Each time card includes minimum of 30 working days, through the 16th to 15th of each month.

Everyone on staff is to write in the hours they worked. Time cards will be looked over at the end of each pay period for accuracy.

SPORTSMANSHIP RULES

The following is a list of possible infractions and minimum suspension duration, to be applied unless otherwise decided by the intramural sports director or advisor.

Infraction	Minimum suspension
Playing on more than one team	One game
Unsportsmanlike behavior	One game
Verbal abuse towards player	One game
Verbal abuse towards official	One game
Physical: Pushing, grabbing, or bumping	One game
Fighting: swinging or striking	Six academic weeks
Verbally threatening official	Six academic weeks
Physically threatening official	Six academic weeks
Playing under a false name	Six academic weeks



Sportsmanship rating rubric

Any teams below 3.0 Sportsmanship rating average will not be allowed to participate in their respective playoffs.

4: Perfect Conduct and Sportsmanship — There is no problems with team members and the game carries on perfectly.

3: Good Conduct and Sportsmanship — Team members verbally complain about some decisions made by the officials and/or show minor dissension, which may or may not merit a technical foul. Teams that receive 1 technical foul will receive no higher than a "3" rating.

2: Average Conduct and Sportsmanship — Team shows verbal dissent towards officials and/or the opposing team, which may or may not merit a technical foul. Captain exhibits minor control over his/her teammates, but is in control of him/her. Teams receiving multiple technical fouls will receive no higher than a "2" rating.

1: Below Average Conduct and Sportsmanship — Teams constantly comment to the officials and/or opposing team from the fields and/or sidelines. The team captain exhibits little or no control over teammates and/or himself/herself. A team which receives and ejection can receive no higher than a "1" rating.

0: Poor Conduct and Sportsmanship — Team is completely uncooperative. Captain has no control over teammates, and/or himself/herself. Any team causing a game to be forfeited, other than by not showing, or receives multiple ejections shall receive a "0" rating.

- A team that receives a "0" rating must have their captain meet with Intramural Sports Coordinator and Student Director the following day to be eligible to play their next contest.
- A team must have a 3.0 or better sportsmanship rating to be eligible to participate in playoffs.
- A team winning a contest by forfeit or honest effort forfeit will receive a "4" rating.

ACKNOWLEDGMENT

Welcome aboard

We are looking forward to having you as part of the team. By joining us, you truly have the potential to make everyone around you better. We believe in working hard, fair play, and sportsmanship. We hope that you will find your time with the intramural sports department to be an uplifting and memorable experience.

To avoid any delay for your first day of employment, please sign and return this page to the intramural sports director as soon as possible.

Attest to the following

I have received and read a copy of the entire WCU intramural sports employee handbook. I fully understand all of the rules, guidelines, policies, and procedures.

Today's date: _____

Employee name: _____

Employee signature: _____

Supervisor's name: _____

Supervisor's signature: _____



Contact info

intramuralsports@western.edu
970-943-2767
University Center #120F
1 Western Way
Gunnison, CO 81231

Office hours

Monday, Wednesday — 1:00-3:00pm
Tuesday, Thursday, Friday — 12:00-4:00pm
(Closed during school holidays)

Intramural sports professional director

Duncan Callahan
dcallahan@western.edu
office: 970-943-3061 | mobile: 970-275-8950

Intramural sports program director

Brennan Nowlin
brennan.nowlin@western.edu
office: 719-651-4642 | mobile: 719-651-4642

Intramural sports director of officials

Ryan White
ryan.white@western.edu
office: 815-575-0076

Grid layout exercise: UNT history

UNIVERSITY OF NORTH TEXAS: A HISTORY

On Sept. 16, 1890, in a boomtown on the North Texas prairie, Joshua C. Chilton established the Texas Normal College and Teacher Training Institute with 70 students and these auspicious words:

“It will be our aim to become leaders in the education of the young men and women of Texas, fitting them to creditably fill the most important positions in business and professional circles. We desire the cooperation of all who believe in higher education and who want to see our state in the very front of intellectual as well as material progress.”



OUR LEGACY

For more than 130 years, the University of North Texas has fulfilled its mission to create leaders and visionaries. Our students and alumni embody creativity, curiosity and something else that distinguishes them and makes them successful — resiliency. These qualities are in UNT’s DNA, borne of an independent spirit that sets us apart.

From admitting women on our opening day to pioneering

water quality research for the region, establishing the nation’s first jazz studies program and becoming one of the first universities in Texas to desegregate, UNT always takes the road less traveled on our path to excellence.

From humble origins in a rented space above a hardware store in downtown Denton, UNT has grown into one of the nation’s largest public universities and the largest in the North Texas region. We are a thriving Tier One public research university

with more than 42,000 students and a path to any career. As an intellectual and economic engine for Denton, the greater North Texas region and the state, we fuel progress and entrepreneurship. And as a catalyst for creativity, we launch new ideas, perspectives and innovations.

As we’ve grown, so has our reach and impact. Our programs are nationally and internationally recognized. Our research and scholarship spans the arts, science, engineering

and everything in between. Our world-class faculty are making breakthroughs every day. And our students and alumni are changing the world around them for the better.

FIRST DECADES

The first building on campus was the Normal Building, completed in 1891 at Hickory and Avenue B, where a fence kept out straying livestock. The private college reached an important milestone when it became state-funded in 1901. Its students lived in boarding houses around campus, following strict curfews and regulations regarding conduct, visitors, telephone use and buggy riding.

INITIAL GROWTH

The first library opened in 1913, the year enrollment broke 1,000 and sports officially began. Standard four-year degrees were offered just as students left for World War I. Campus life



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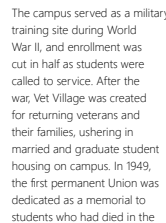
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INITIAL GROWTH

The first library opened in 1913, the year enrollment broke 1,000 and sports officially began. Standard four-year degrees were offered just as students left for World War I. Campus life picked up in the ‘20s with the debut of Saturday Night Stage Shows, directed by Fessor Floyd Graham and featuring his Aces of Collegeland band. The shows, tours and radio broadcasts spread the fame of the music program.

DEPRESSION AND WORLD WAR II

The campus felt the effects of the Depression, but government funding programs supported the construction of the first dorms and a new library, and the college became one of the first in the nation to offer adult education classes. As master’s programs developed, faculty research began to grow. The first funded studies on water quality marked the birth of UNT’s work in environmental science.



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FIRST DECADES & INITIAL GROWTH

The first building on campus was the Normal Building, completed in 1891 at Hickory and Avenue B, where a fence kept out straying livestock. The private college reached an important milestone when it became state-funded in 1901. Its students lived in boarding houses around campus, following strict curfews and regulations regarding conduct, visitors, telephone use and buggy riding. The first library opened in 1913, the year enrollment broke 1,000 and sports officially began. Standard four-year degrees were offered just as students left for World War I. Campus life picked up in the ‘20s with the debut of Saturday Night Stage

The goal of this assignment was to design on a grid, with the story of how the University of North Texas was founded as the content.

It was fun to conjure up three separate approaches using the same grid, in an effort to make the backstory shine in different ways.

Before: original document

After: redesign [1]

After: redesign [2]

superhero picnic
 Wednesday 19th August 2015.
 Wollaton Park, Nottingham.
 11am-3pm. Free entry*

dress as your favourite superhero and join us in the park for a super fun day.

POW!

there's lots of activities happening on the day to keep heroes happy, including:

- craft making
- face painting
- inflatables
- archery
- other games

and bring your superhero teddy for the chance to win a prize for the best dressed

BAM!

Children's Afternoon Tea Party in The Yard Studio
 bring your children along for a super tea party with sandwiches, jelly and ice cream

3pm - 5pm
 £5 per child, £8 per adult
 Booking essential. Call 0115 876 3100

help us break the Guinness World Record for most people dressed as superheroes by bringing all your friends. We need more than 1,580 heroes to do it!

ZAP!

Wollaton Hall & Deer Park
 Wollaton
 Nottingham
 Nottinghamshire
 NG8 2AE
 tel: 0115 876 3100

www.nottinghamcity.gov.uk/superheropicnic

car parking charges may apply some activities may incur extra costs children must be accompanied by an adult

Nottingham City Council

SUPERHERO PICNIC 
 Wednesday 19th August 2015 | Wollaton Park, Nottingham | 11:00am-3:00pm Admission is free



Nathan Smith
 TECM 5280
 Spring 2022

Bring a teddy bear dressed as a superhero, for a chance to win "best dressed" stuffed animal.

Let's beat the record
 We need more than 1580 heroes to do it.
 Calling all heroes... Help us break the Guinness World Record for the most people dressed as superheroes by bringing all your friends.

Children's afternoon tea party
 3:00pm-5:00pm | £5 per child | £8 per adult
 Bring your children to The Yard Studio for a super tea party with sandwiches, jelly, and ice cream. Reservations required, call ahead to book.

Activities
 - Archery
 - Craft making
 - Face painting
 - Inflatables
 - Other games

Address
 Wollaton Hall & Deer Park
 Wollaton
 Nottingham
 Nottinghamshire
 NG8 2AE

Details | tel: 0115 876 3100
 Car parking charges may apply. Some activities may incur extra costs. All children must be accompanied by an adult.
www.nottinghamcity.gov.uk/superheropicnic

Nathan Smith | TECM 5280 | Spring 2022



Wednesday 19th August 2015 | Wollaton Park, Nottingham | 11:00am-3:00pm

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 - Other games

Address
 Wollaton Hall & Deer Park
 Wollaton
 Nottingham
 Nottinghamshire
 NG8 2AE

Details | tel: 0115 876 3100
 General admission is free for all ages.
 Car parking charges may apply. Some activities may incur extra costs. All children must be accompanied by an adult.

www.nottinghamcity.gov.uk/superheropicnic

Nottingham City Council

source: <https://jesscreativeartsstudent.wordpress.com>

The essential premise here was to take an original document of one's choosing, and come up with two distinct redesigns. For the first redesign [1], I tried to make it appealing to parents.

For the second version [2], I went further afield and attempted to come up with sort of a *Justice League* design that might be more engaging for kids in an cartoon show sort of way.

Before & after: Photoshop editing [1]

This is my son Levi climbing a tree. Initially, it was a bit washed out due to back-lighting.

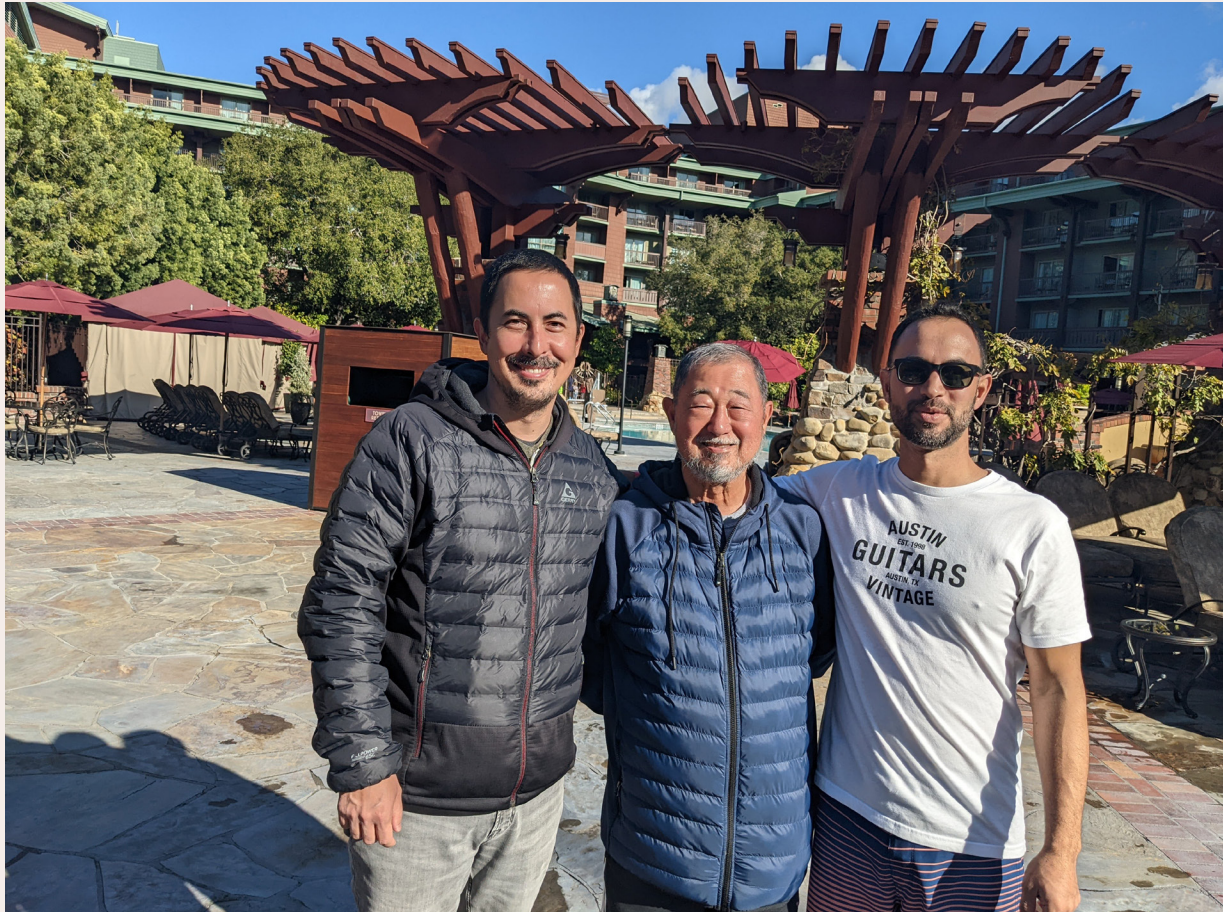


I boosted the contrast, sharpness, and color levels of the photo. I also adjusted the crop for a tighter focal point.

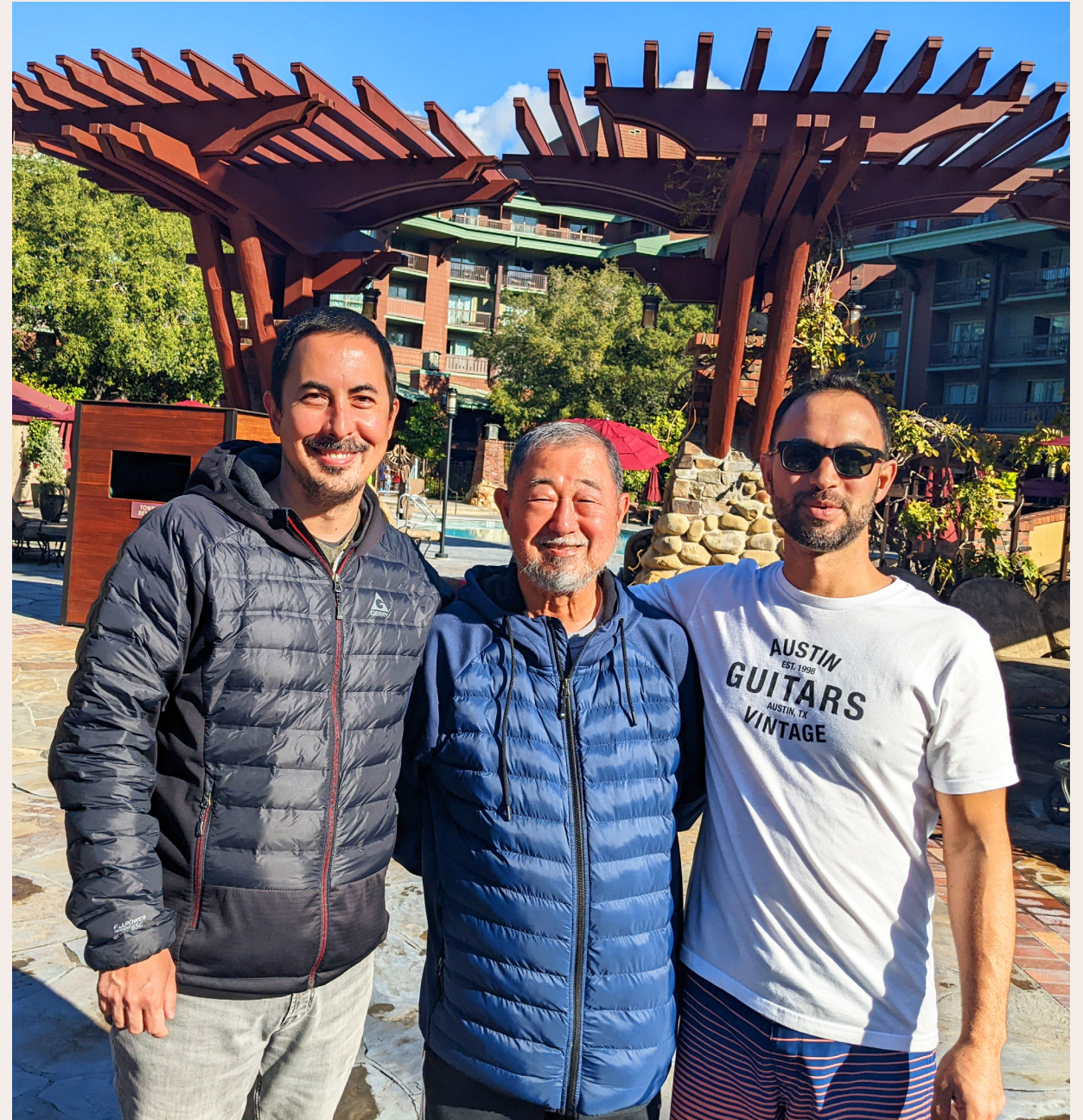


Before & after: Photoshop editing [2]

This is me, my dad, and brother. The framing of the original photo was off-center and the colors felt a bit muted.



I boosted the contrast, sharpness, and color levels of the photo. I also adjusted the crop for a tighter focal point.



Album covers: “strike terror into their hearts”



This assignment posed an interesting challenge. I designed album cover art for a fictional band. Based on various criteria — the first letter of one’s first name, last name, and birth month — that meant I needed to design for...

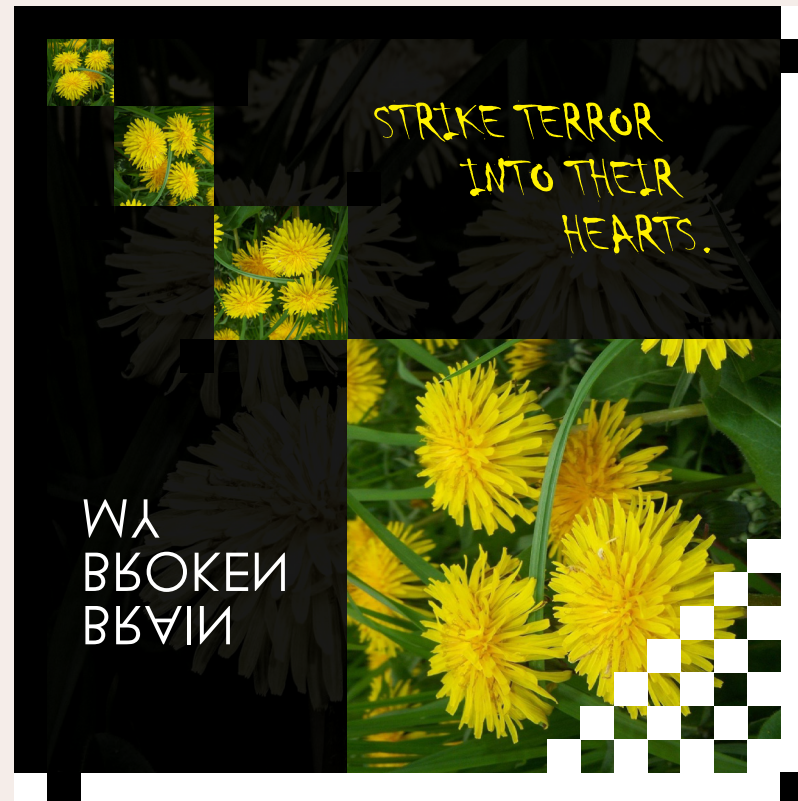
Image: Stock photo of a dandelion.

Band name: My Broken Brain.

Album title: 2–5 words from the following quote.

“Criminals are a superstitious cowardly lot. So my disguise must be able to strike terror into their hearts. I must be a creature of the night, black, terrible...”

— Batman comic, 1939



The following is a brief description of each album cover. I sort of meandered, and let the designs take me in their own direction.

- **Album #1:** I saw in my mind’s eye a *Nine Inch Nails*, *Sublime*, and *House of Pain* aura. I added a lyrics advisory for extra authenticity.
- **Album #2:** For this one, I was channeling the 1980s. I wanted it to look like it perhaps could be a *Depeche Mode* cover.
- **Album #3:** I was wondering what a heavy metal album might look like on vinyl. Also, I added a little skull and crossbones. Technically, it is not an extra image. It is a letter “N” using the Wingdings font.



In terms of the required parameters, no other images were allowed.

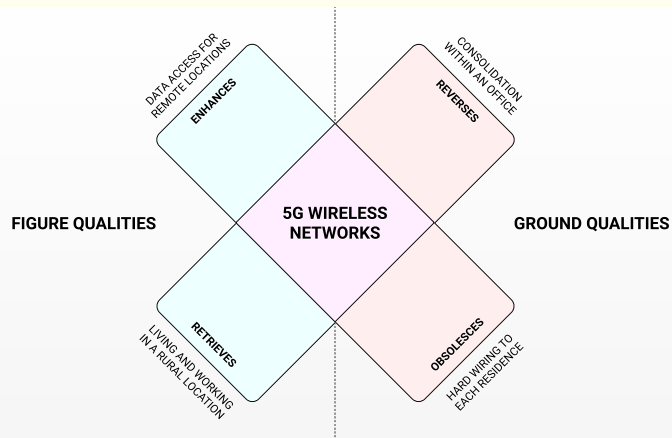
Students could retouch the single photo that was provided, but beyond that we had to get creative.

Each album cover was designed as a 5-inch square, using a 24x24 grid. The words “My Broken Brain” are flipped, to simulate a mental breakdown.

Overall, I am happy with how these pieces turned out. Album cover #3 is probably my most favorite. I was going for sort of a “funeral wreath” effect by rotating the photo and using it as a border.

Exploring enabling technologies

Exploring enabling technologies: 5G networks
Nathan Smith — TECM 5280 — Spring 2022



What is 5G?

The term 5G simply stands for the fifth generation of broadband cellular network connectivity. From a technology standpoint, it is not that much different from previous 4G or LTE (long term evolution) networks. 5G uses similar concepts, albeit operating at higher speeds.

One key difference is that the speed now rivals that of home and office Wi-Fi connections, such that 5G can be a viable alternative to having a hard wired connection in one's residence or place of business.

Within the overarching term 5G, there are actually a number of signal frequencies that are represented. For example, these are the frequencies used by T-Mobile.

- Band n71 (600 MHz)
- Band n41 (2.5 GHz)
- Band n260 (39 GHz)
- Band n261 (28 GHz)

Why is 5G significant?

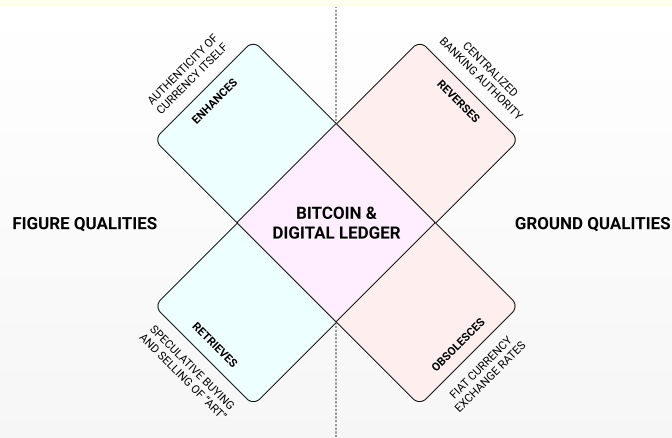
In 2016, mobile web browsing overtook desktop usage for the first time. Mobile (including tablet) usage rose to 51.3% whereas desktop browsing fell to 48.7%.

This is significant, because it means that more people are accessing information using devices with cellular connectivity. What it means to get information online has leapfrogged the original vision of Bill Gates: "a computer on every desk." Instead, we are seeing a rise of: "a computer in every pocket," in the form of modern phones.

With the increased speeds of 5G, more people will be able to do work from wherever they have connectivity. This paradigm shift — coupled with the digital transformation brought about by COVID-19 quarantine — may eventually lead to a more distributed workforce.

It could potentially mean classrooms having more access to learning materials in areas of the world where it would be cost prohibitive to build a landline based network.

Exploring enabling technologies: Bitcoin & digital ledger
Nathan Smith — TECM 5280 — Spring 2022



What is blockchain (digital ledger)?

In 1982, cryptographer David Chaum proposed a secure protocol in his dissertation "Computer Systems Established, Maintained, and Trusted by Mutually Suspicious Groups."

In 1991, Stuart Haber and W. Scott Stornetta conceived of a cryptographically secure digital ledger, with a series of tamper-proof timestamps. In 1992, they were joined by Dave Bayer and added Merkle trees — subdivided portions of cryptographical verification — which allowed for what we now think of as "blockchain."

What is Bitcoin?

In 2008, Satoshi Nakamoto — likely a pseudonym for one or several people — conceptualized using blockchain as a way to prove the veracity of a digital currency: Bitcoin (BTC).

A number of other digital currencies have arisen: Ethereum (ETH), Litecoin (LTC), Ripple (XRP), to name a few.

Why is it significant?

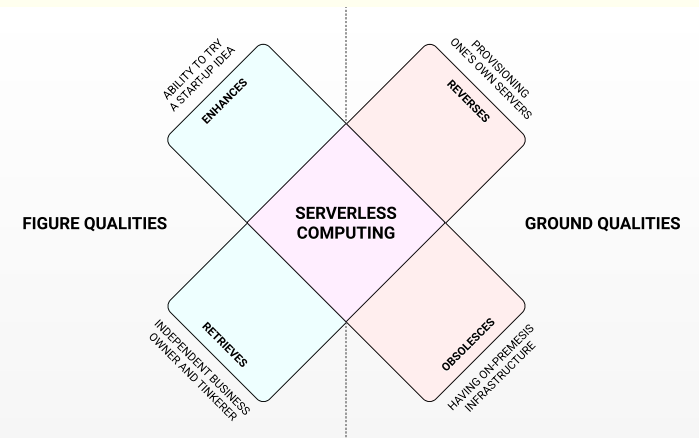
Ultimately, money of any kind only has the value that we collectively ascribe to it. When you think about how many "dollars" are in your bank account, you are thinking in terms of agreed upon wealth. Bitcoin — and other currencies like it — take this to its furthest logical extreme.

Except that, rather than a few centralized banking systems worldwide, the distributed digital ledger makes everyone (and nobody in particular) the record keepers.

The implication of which is: transactions are potentially beyond the reach of nation state governance, though legislation and regulation are catching up. Exchange rates seem antiquated when compared to 100% digital currency. If it is all digital anyway, why "convert" from CAD to USD?

It has also given rise to the purchase of NFTs (non-fungible tokens), certificates of ownership for digital "art." The original tweet by Jack Dorsey is currently for sale, with bidding at \$2.5 million dollars.

Exploring enabling technologies: Serverless computing
Nathan Smith — TECM 5280 — Spring 2022



What is cloud computing?

A somewhat cynical way of thinking about it is: "Someone else's computer, for which I pay a rental fee."

Cloud computing is essentially an "on demand server," whereby one can provision what is needed and pay a fractional price of what it would cost to own, maintain, and upgrade one's own server infrastructure.

After years of IBM and Oracle dominating the market for on premises approaches to mainframes, Amazon essentially created the market segment of cloud computing in 2006.

In 2010, Microsoft debuted its Azure cloud offering. IBM and Google followed suit a few years later, with cloud computing offerings of their own.

Household brands like Netflix rely on Amazon's cloud computing infrastructure. Business productivity apps like Slack and design juggernauts such as Figma also make use of AWS (Amazon Web Services).

Why is serverless computing significant?

Whereas cloud computing can be thought of as "infrastructure as a service," serverless — though it is a misnomer — means not having to worry about servers. It is "peace of mind as a service," where software developers only need to be concerned with the code they are writing.

For example, when designing and building a mobile app... That expertise differs from what one would need to setup a "back end" API to send/receive data from a phone. This is where serverless functions can be helpful.

Amazon allows for a *.zip file of code to be uploaded, and then that code can be called when certain criteria are met, or various events are fired.

Though this centralizes more importance with Amazon (or Microsoft Azure), it also democratizes the ability to spin up an app or start-up business idea. Investment to test something now costs pennies on the dollar, compared to the capital of owning one's own server hardware.

I created these documents in [Figma](#), as part of research into "enabling technologies." That is, any breakthrough that facilitates a paradigm shift.

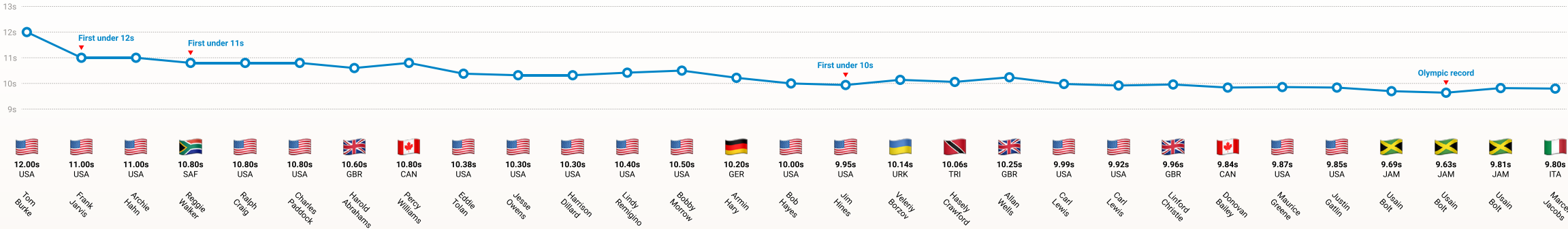
I chose to delve into the topics of: 5G networks, blockchain, and serverless computing. Each of these affects incumbent technologies in different ways. Some could be augmented, whereas others might be potentially obviated.

Infographic: change over time

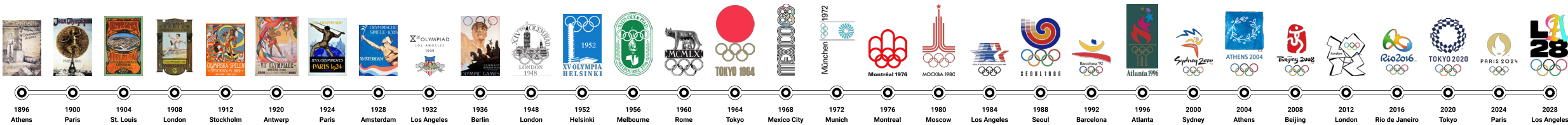
Change over time: The Olympic Games / A visualization by Nathan Smith / TECM 5480, spring 2022

125 years of the 100 meter dash – Times have gradually decreased from 12 seconds, to the 9+ second range

Usain Bolt also holds the 100m world record of 9.58 seconds, which he set at the World Championships in 2009.



Usain Bolt has a career 8 gold Olympic medals. He is the only 100m sprinter to win gold in three Olympic games.



For this infographic, the theme was "change over time." I wanted to balance the display of athletic prowess with the evolution of the artistic trends for the various Olympic host city logos. I created this document in [Figma](#).

Humans have become increasingly faster over the past century. Meanwhile, graphic design has gradually shifted from posters attempting photo realism, to a more minimalist style with abstract geometric shapes.

Personally, I kind of miss the more classical aesthetic and would love for that visual style to make a comeback sometime in the future.

Infographic: medal counts

One great thing about world sporting events is that there is no shortage of data being generated. An interesting statistic that is usually tracked is the medal count during any given summer (or winter) competition. What we do not hear as much about is the aggregate total of medals, over time.

Thankfully, there is a plethora of data sets available on [Wikipedia](#). This is a straightforward bar chart, showing the 10 countries with the most medals.

Here are few details worth noting.

- The blue bar indicates the raw total, including: gold, silver, and bronze. Likewise, the gold bar shows only gold medals.
- The percentage beneath each country's name relates to what number of medals are gold, relative to the total count.
- For this visualization, I combined the medal totals of USSR and the Russian Federation.
- I drew this by hand using [Figma](#).

