

General Info

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Intended Major: Stats & Data Science; Physics; Art

Online Presence

General: www.chenhanke.me Tech: www.kokecacao.me
Portfolio: art.chenhanke.me Github: github.com/kokecacao
Research: www.researchgate.net/profile/Hanke_Chen2

Education

-- Schools & Affiliation --

Sandy Spring Friends School, Sandy Spring, MD;

- 3.92 / 4.00 GPA (Unweighted); Unranked
- Completed all science/math AP the school offers
- 317 service hours

Affiliations: kaggle-cn, ods.ai, KentAI Lab, Kaggle-Jr.

-- Extra Courses --

Udacity Machine Learning Nanodegree [graduated 2017]
Udacity Deep Learning Nanodegree [graduated 2018]
AI for Robotics at Stanford Pre-Collegiate [completed 2018]
UIUC Master in CS (Data Mining Specialization) on Coursera

- Data Visualization [completed w/ GPA 98.7%]
- Text Retrieval and Search Engines [currently enrolled]

Artificial Intelligence Research & Honors

Medical Diagnose: Histopathologic Cancer Detection

[CV | 3 months | 2019]

- Solo Public 1st; Private 113th; /1157 participants
- Develop algorithms to identify cancer w/ microscopic images
- Single model achieved 98% AUC accuracy
- Breaking PCam state-of-the-art benchmark (arXiv:1806.03962) by 2%

Extracting Cellular Location of Human Proteins Using Deep

Learning [CV | 3 months | 2018]

- Paper submitted @ Research Gate:
<https://doi.org/10.13140/RG.2.2.16431.28326>
- Proposed a human proteins modeling method by Deep Learning
- Google Science Fair "2018 Entrant New Idea Recognition"

Medical Diagnose: SIIM-ACR Pneumothorax Segmentation

[CV | 3 months | 2019]

- Global Bronze Medal; Top 7%
- Develop algorithms to diagnose and segment pneumothorax from chest radiographic images.

[Kaggle Honors] for Data Science Competitions

- Obtained "Discussion Expert" Title
- Global Ranked 299/111,194 (Top 0.3%) among other datascientists
- 3 Gold + 4 Silver + 43 Bronze Discussion Medal
- 1 Bronze Competition Medal; 3 Bronze Kernal Medal;

(for more: visit my general website <https://ai.chenhanke.me>)

Experience

KokiCraft Network Game Server/Owner, CEO, Programmer (2014 - 2017)

- Founded KokiCraft Network: 1st GTA Minecraft Server in China.
- Programmed & Update new game elements monthly
- Defended against 50+ DDoS attacks / month.
- 344,941 players, \$3500+ profit
- \$500/month profit when open donation.

Robotics At Maryland (R@M) at UMD/Computer Vision

Engineer (2018 - now)

- Develop UMD club's underwater robotics vision algorithm using Deep Learning for AUVSI & ONR's Robosub competition.
- The only Deep Learning student scientist in the club
- Implemented & improved "GradCam" in a 2016 research paper to perform semi-supervised segmentation w/ partially labeled data

SSFS Robotics Team/Captain, Founder (2017 - now)

- Founded Robotics team & recruited ~10% school population
- Fundraised \$1230 from school; \$3305 from Kuka, Leidos, NAEC companies
- Won FTC Judges Award & Local 1st (first ever Robotics award in school's history)
- Represent school attending US Science & Engineering Festival
- Tutor group members on coding; cultivating new leaders

X-Order Lab/Student Researcher, Data Scientist (2019 - now)

- Member of X-Order Lab (<http://xorder.ai/>)
- Recrewed as a researcher by Doc. Yuyi Wang (from ETH Zürich)
- Currently doing research about Generating Kenetic Chains' Design Using Deep Learning

(for more: visit 2-page CV <https://cv.chenhanke.me>)

My Own Projects

Fixing Stanford Website's Vulnerability (2018)

- Found & Reported a SQL Injection vulnerability on Stanford University's SPCS website. Proposed a patch.

Rocket Designing & Launching (2019)

- Successfully design & build a rocket in simulation (KSP), capable of launch from Earth, staging fuel tanks, suicide burn on Moon, safely come back to Earth

Github "Redstone Torch" Software (2018 - now)

- Developed a platform based on Pytorch for Kaggle competition and general Computer Vision challenges.
- Solve interdisciplinary issues in biology, chemistry, geology, medicine, and manufacturing

Book "Tell Me What Rain Knows" (2017)

- A book of personal collection of prose and reflections
- Discussed social issues: law enforcement, controversy in archeology, anime industry's development obstacle; Socio-Cultural Psychology in traditional "Pocket Money".
- Prose about family, friends, and parting.

Web Development & UI Design (2017 - now)

- Coded 3 personal and 3 business website (for KokiCraft server, Art club, and Robotics club) using HTML and industrial frameworks
- Coded UI design "Brownie" - a minimalistic geek style
- Developing responsive website design to display properly on any device (on laptop, iPad, mobile phone)

Genetic Algorithm for Chemistry 14 Bottle Problem (2018)

- Used Genetic Algorithm to interpret results of 210 experiments
- Program to resolve the composition of the reactance in seconds

Chaos Theory Research (2019)

- Data Analyzed & self-programmed physics engine able to visualize the 3-Body Problem
- Generated and studied bifurcation map for Chaos System
- Introduced Human-Computer Interaction (HCI) able to control each planet in the 3-Body Problem
- Created music track based on bifurcation map

AI-Generated & Aided Arts Portfolio [CV | 2018 - now]

- Please visit my art portfolio: art.chenhanke.me

(for more: visit my technical website <https://www.kokecacao.me>)

Other Skills

Fluent Programing Language: Java, Python, SQL

AI Tools: Linux(Ubuntu), OpenCV, Pytorch, Keras, Tensorflow, Pandas, Numpy

Engineering: Android, Arduino, Raspberry Pi, CAD

Website Language & Framework.: html, css, Ruby, Javascript, Jekyll, Laravel

Language: Chinese (native) | English (fluent, TOEFL 111)

Art: AI-assisted Art, Watercolor, Photography, Acedemic Drawings

Design: Mechanical Design, Game Design, UI Design, Video & Animation Making, 3D Design

Sports: CrossCountry, Skiing, Snowboarding, Sailing

(for more: visit my portfolio <https://art.chenhanke.me>)

New 2020 Supplemental Updates to Resume

Current Education

-- Schools & Affiliation Updates --

Sandy Spring Friends School, Sandy Spring, MD;

- New 1st semester GPA: 4.27/4.00
- **Senior Project:** Last week, I was selected among a cohort of 9 to participate in our school's "Senior Project: A Pilot Program" (will appear on my transcript), graduating with "Capstone Honor."
- (See below: Linguistics: Bengali.AI Handwritten Grapheme Classification)

-- Online Courses Updates --

UIUC Master in CS (Data Mining Specialization) on Coursera

- Text Retrieval and Search Engines [currently enrolled]

Current Artificial Intelligence Research

Linguistics: Bengali.AI Handwritten Grapheme Classification

[CV | 3 months | 2020]

- My "Bengali AI Handwritten Grapheme Classification" project focuses on digitizing the Bengali educational system by developing algorithms to recognize over ten thousand different handwritten graphemes. Like GoogleBook, it'd enable the creation of more accessible digital libraries. Last week, my models just surpassed the 96% accuracy benchmark.
(<https://www.kaggle.com/c/bengali-ai-cv19/overview>)

Meta-Learning: Abstraction and Reasoning Challenge

[CV | 3 months | 2020]

- Current machine learning techniques are data-hungry and brittle - they can only make sense of patterns they've seen before. In this challenge, I'll create an AI that can solve reasoning tasks (similar to IQ test) it has never seen before with only 4 samples. If successful, I'll help bring computers closer to human cognition and open the door to completely new AI applications.
(<https://www.kaggle.com/c/abstraction-and-reasoning-challenge/overview>)

(for more: visit my general website <https://ai.chenhanke.me>)

Additional Experience

SSFS Robotics Team/Captain, Programing Lead (2017 - now)

- As the team captain, I led the team to the FIRST Tech Challenge Local Qualifier at Howard County.
- In the following 2 months, I plan to open an advanced robotics programming workshop Wednesday and Friday every week to teach SSFS students about robotics programming.
- In this lecture and project based-learning, students will learn topics from the basic Java to advanced Finite State Machine, Search Algorithms, PID Control, and Computer Vision systems. The course will prepare themselves in the next year's robotics competition by learning state-of-the-art progress and practice industrial programming techniques.

Volunteer in FIRST Tech Challenge/Control System Advisor, Field Inspector (now)

- I volunteered in the FIRST Tech Challenge Robotics Maryland Championship to be a Control System Advisor and Field Inspector.

Nigeria Business Partnership/College, Media, Special Project Chair (2017 - now)

- In this internship, we provided business strategies for the Nigerian Kawu Irrigation Farm. After monitored soil tests for NPK, pH, and salinity, we made solution proposals through local experiments with biochar including Crop Rotation and Biochar to raise the pH value of soil. The project's profit supported 19 orphan's college education.
- As a Special Project Chair, I developed our team's solution and wrote articles for local newspapers to raise awareness of the importance of education in business. I am currently designing logos and cash receipts for the business.

(for more: visit 2-page CV <https://cv.chenhanke.me>)

Additional Projects

Linguistic Analysis for Wuhan Coronavirus Outbreak (now)

- In the midst of the Wuhan coronavirus outbreak that is sweeping across China and causing tremendous anxiety among the global community, I'm teaming up with psychologists and data scientists to help monitor and support citizens' mental health through web scraping, text mining, and sentiment analysis on Weibo (a Twitter-like social media platform in China).
- With increasing negative and false reports about the virulence and transmissibility of the virus on social media, detecting keywords that are causing public panic and depression is crucial to preventing further physical and psychological harm. Through data analysis, we hope to obtain real-time updates and accurate information to guide people toward better decision-making.

Programmed Animation to Explain Research Products (now)

- Besides passing on technical knowledge from experts through writing academic journals, I am also giving step-by-step help for the public to understand the latest research through short films. Inspired by Youtube channel 3Blue1Brown, I am experimenting with programmed animation to explain physics that people don't intuitively get in our daily lives, explaining physics concepts more efficiently than traditional lectures.

X-Art My 4-Year AI+Art Portfolio (2017 - now)

- I've been creating 2D, 3D, and digital art pieces for the past 4 years, where I combine artificial intelligence, robotic motions, game design, programming, logo design, interface design, web-page design, and even biochemistry with artistic expressions to create cross-disciplinary artworks that experimented with lines, shapes, and color schemes to touch on themes such as emotions, awe of nature, self-identity, and various social issues. Among them, I selected and printed out a 20-page pamphlet.

(for more: visit my portfolio <https://art.chenhanke.me>)