EKKASIT (EK) PINYOANUNTAPONG

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Research Focus: My research interests lie in real-time, scene-aware 3D human motion generation with a focus on controllability and high-quality synthesis. Currently, I am working on text-to-motion guiding reinforcement learning through imitation learning to explore physically plausible motion in simulated environments.

EDUCATION

University of North Carolina at Charlotte | Charlotte, North Carolina
Ph.D. in Computer Science
Stevens Institute of Technology | Hoboken, New Jersey
Master of Science in Software Engineering
Sirindhorn International Institute of Technology | Bangkok, Thailand
Bachelor of Engineering in Communication Engineering

PUBLICATIONS

ControlMM: Controllable Masked Motion Generation | Arxiv 2024 (under review)
Ekkasit Pinyoanuntapong1, Muhammad Usama Saleem, Korrawe Karunratanakul, Pu Wang, Hongfei Xue, Chen Chen, Chuan Guo, Junli Cao, Jian Ren, Sergey Tulyakov
BAMM: Bidirectional Autoregressive Motion Model | ECCV 2024
Ekkasit Pinyoanuntapong, Muhammad Usama Saleem, Pu Wang, Minwoo Lee, Srijan Das, Chen Chen
MMM: Generative Masked Motion Model | CVPR 2024 **[Highlight]**
Ekkasit Pinyoanuntapong, Pu Wang, Minwoo Lee, Chen Chen
GaitMixer: Skeleton-based Gait Representation Learning via Wide-spectrum Multi-axial Mixer | IEEE ICASSP 2023
Ekkasit Pinyoanuntapong, Ayman Ali, Pu Wang, Minwoo Lee, Chen Chen
GaitSADA: Self-Aligned Domain Adaptation for mmWave Gait Recognition | IEEE MASS 2023
Ekkasit Pinyoanuntapong, Pu Wang, Minwoo Lee, Chen Chen
Skeleton-based human action recognition via convolutional neural networks (CNN) | Arxiv 2023
A Ali, Ekkasit Pinyoanuntapong, P Wang, M Dorodchi

Projects

Text-to-Motion Generation

- Developed a BERT-like text-to-motion model to achieve real-time performance, high fidelity, and motion editability, utilizing CLIP model
- Achieved state-of-the-art (SOTA) speed and quality by utilizing a bidirectional masked model
- Designed the model to generate motion from text without requiring prior knowledge of the motion length while maintaining editability

Skeleton-based Gait Recognition

- Achieved a SOTA model for skeleton-based gait recognition with privacy preservation

Radar-based Gait Recognition

- Addressed domain discrepancies of mmWave data from different environments, as mmWave data is sensitive to environmental variations
- Created a mmWave gait recognition dataset encompassing multiple environments at various times to mitigate domain discrepancies in radar-based gait recognition
- Implemented a novel domain adaptation technique utilizing semi-supervised contrastive learning and consistency training without requiring labels for target domains

Robotics Simulation

- Developed a centralized robotic platform to remotely control a swarm for mapping physical environments using SLAM employing TurtleBot running on ROS and Gazebo simulation

SKILLS

Programming Languages: Python, C/C++, Shell, Latex, Matlab, JavaScript, HTML5, CSS3, Java, PHP, AS3
Frameworks & Libraries: Pytorch, TensorFlow, OpenCV, Keras, SciPy, NumPy, Pandas, Scikit-learn, ROS

WORK EXPERIENCE

Snap Inc. | Santa Monica, California July 2024 - Present
Research Intern

- Researched controllable text-to-motion models to achieve real-time performance and high quality

University of North Carolina at Charlotte | Charlotte, North Carolina January 2021 - Present
Research Assistant

- Created the text-to-motion model achieve SOTA result on HumanML3D and KIT datasets
- Designed multiaxial mixer architecture (i.e. spatial, temporal, and channel) to balance global and local inductive bias of spatiotemporal human skeleton (pose) data outperformed the SOTA by 12%
- Developed the novel semi-supervised method for millimeter-wave radar to mitigate the domain discrepancy, outperformed the SOTA unsupervised domain adaptation in low-data regime by 15%

Cox Automotive (DealerTrack) | New Hyde Park, New York September 2017 - November 2020
Machine Learning Engineer

- Used machine learning and statistical modeling to predict the probability of lender approval
- Developed internal scalable React framework architecture to be able to consume and communicate between separated self-contain applications on private npm supporting Redux and Redux-saga
- Developed a machine learning model to classify vehicle images and auto-fill the form for customers using Pytorch with fast.ai running on AWS P2 instance

Stevens Institute of Technology | Hoboken, New Jersey August 2016-May 2017
Research Assistant

- Developed path planning algorithms to drive Turtlebot running on ROS, also, worked on a centralized robotic server remotely controlling swarm to build a map of the physical environment using SLAM & Navigation with TurtleBot.
- Developed a centralized robotic control platform to support physical robots with video streaming using WebRTC, OpenCV, Socket.io, and TCP Socket
- Created website and Android app to control robots and view video streaming over IP in real-time
- Created Face Recognition and Object Detection algorithm for machine vision using FaceNet and YOLO

FULL STACK EXPERIENCE

Area80 Co., Ltd | Bangkok, Thailand April 2011–February 2015
Senior Full Stack Developer

- Designed software architecture using MVC, Universal JavaScript, Server Rendering (Isomorphic), Load Balancing, Cluster, Static Cache Files, based on TDD and DevOps techniques
- Developed front-end and back-end websites using HTML, JavaScript, AS3, PHP, MySQL, Node.js, and MongoDB such as CMSs, websites
- Created embedded systems, games, and applications using Arduino, Raspberry Pi, Kinect, Wii gun, face detection, motion detection, augmented reality, and sound recording
- Created mobile applications using Adobe Air for Android and iOS
- Designed back-end architectures using CodeIgniter for PHP and developed the company's MVC front-end framework and designed user flow to offer the best user experience (UX)

Design Sundae Co., Ltd | Bangkok, Thailand December 2010–March 2011
Full Stack Developer

- Developed interactive websites and games using AS3, HTML, JavaScript, and PHP
- Created animations using Adobe Flash, Illustrator, and Photoshop

Global Wireless Co., Ltd | Bangkok, Thailand June 2008–November 2010

Front-end Leader

- Developed an e-learning framework to support real-time video streaming, interactive games, and exams
- Managed work-flow and program structure of animation and programming in an Agile team

Keywords: GenAI, Generative AI, Multimodal, Text to Motion, Computer Vision, LLM