JACQUES PERRAULT

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projects: https://github.com/jdilla52
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EXPERIENCE

2022 - 2023

BITSKI - SR BACKEND DEVELOPER
Using third party and raw web3 data created pipelines for effectively processing and enriching data into presentable graphql apis and end user notifications. Worked on core rust libraries for data processing and web3 abstraction. Helped maintain and evolve core infrastructure to improve user and developer experience, migrating several on-prem deployments such as vault, kafka and cockroach to the cloud.

2021 - 2022

BRANCH TECHNOLOGY - SR FULL STACK DEVELOPER
Lead a small team to drive cloud adoption focused on 3d printing in construction. Developed a web based tool for the evaluation of 3d revit models for architects to determine cost and design feasibility; combining serverless with 3d kernels for highly scalability. Drove an iiot initiative to stream and monitor manufacturing cells; implementing industry standard protocols in rust. Implemented a set of web apps for path planning and operation of large kuka robotic arms using ROS.

ADIDAS INNOVATION - TMP - SR DIGITAL CREATOR

2018 - 2021

SR. Worked on digital fabrication initiatives and concepts with a focus on additive manufacturing. Lead a team of three team members, as well as managed a number of consultants. Drove development to operationalize research papers and theoretical manufacturing techniques resulting in frontend and backend applications.

2016 - 2018

M. Drove development of a 3d printed produce called 4d. Responsible for backend Python services to perform 3D operations and optimization and a react/three.js web client.

2015 - 2016

JR. Against a tight timeline, delivered an initial 3d printed shoe with Carbon. A prototype pipeline was put in place using Grasshopper, c# and Python. Developed initial hex meshing strategy and lattice exploration.

2014 - 2015

TMP. As a contractor at Adidas supported in moving some of their footwear development process to 3D and to explore generative tools focused on basketball. Worked on a number of shoes and applying Grasshopper and Processing.js.

2014 - 2014

ALTAIR - INTERN
Using Altair's background in simulation and optimization software, collaborated with engineers to go about designing a running blade and prosthetic system for paralympian, Blake Leaper. Exposed to inspire and hyper works optimization software and leveraged rhino and grasshopper for blade design.

2012 - 2013

KHORA - STARTUP-CEO
Khora was a startup which was founded with the idea of enabling mass customization of home goods through the use of 3d web based interfaces and digital fabrication. Created a three.js web client and custom cnc tool path generation in grasshopper.

SKILLSETS

Rust:	Serde, Protobuf, Tcp, Tokio, Paho-Mqtt, aws, Diesel, Sqlx, Actix, Reqwest, Graphql, Bevy
TYPESCRIPT:	React, Three.js, R3fiber, GLSL, WASM, Techsoft- Hoops, Zustand, Redux.
NODE:	Aws-sdk, NOSQL, Redis, Websockets, Express, Flutures.
PYTHON:	Numpy, Cython, Pandas, Scipy, Blender, Libigl, Rest, Spark, Ros.
C++:	Cmake, aws-sdk, OOP, Libigl, Eigen, ROS.
C#:	Cad plugin development, RhinoCommon, numerics, OOP.
CLOUD:	K8s, Helm, Argo, Vault, Lambda, Api-gateway, Appsync, Jenkins, Terraform, Aws-cdk.
Data	Kafka, Cockroach, Mongodb, Dynamo, s3, Rabbitmq, Redis.

EDUCATION

2010 - 2014	ACCD ART CENTER COLLEGE OF DESIGN	—	product design
2012	CERRITOS COLLEGE	—	certificate in composite fabrication

AWARDS

2019	ADIDAS 4D DIA SILVER
2017	ADIDAS 4D TIME BEST INVENTIONS
2016	ART CENTER YOUNG INNOVATOR

PATENTS

2018	11 PATENTS AROUND LATTICE GENERATION
2016	OUTSOLE DESIGN PATENT: NO. 29/552373
	STRING THEORY 16/927643

EXPERIENCE - UNABRIDGED - PART I

BITSKI - SR BACKEND DEVELOPER

2022 - 2023

Joined a passionate and talented startup focused on lowering the barrier to entry of entry for web3. Focused on backend apis and lead data processing initiatives. Leveraged Rust and collaborated to drive best practices and establish standards.

Architected and implemented a systems for asset floor prices and nft offers.
- Went through comprehensive RFC's to design a highly available system using kafka.
- Wrote custom rust consumers and producers for syncing state for apis and sending push notifications.
- Leveraged Kustomize and Benthos to ease growing pains of sprawling data micro-services services.
- Leveraged websockets for consuming large quantities of off chain events, established pipeline to filter and enrich events..

Created a high performance and highly available system for processing on-chain events.
- Wrote custom Rust urdfs for spark allowing consolidated high performance message decoding and modeling.
- Replaced a spark pipeline with custom rust resulting in an order of magnitude improvement in end to end performance.
- Reduced the cost of third party api's by half and greatly reduces pipeline complexity and footprint

Implemented a system for metadata aggregation and curation. In particular contract metadata lacks consensus on implementation and while critical to a wallet is difficult to create a clean and consolidated data source.
- Designed and implemented a multistage, multi-chain system resulting in a consolidated and high performance metadata api.
- Setup a pipeline to enrich and sanitize data from a long list(of third parties and on chain sources.

Migrated and managed several business critical infrastructure components.
- Migrated kafka from aws msk to confluent greatly decreasing operational overhead.
- Migrated to cockroach cloud. Improving data access patterns from on-prem to cloud based clusters.
- Migrated and managed Hashicorp Vault collaborating with teams for credentialing.
- Migrated several federated apollo graphql apis from node to rust, greatly improving both performance and maintainability.

BRANCH TECHNOLOGY - SR. FULL STACK DEVELOPER

2021 - 2022

Brought in to champion cloud based solutions for a growing startup focused on 3d printing buildings.
- Manage two junior developers to deliver full stack solutions across the business.
- Ultimately responsible of all aspects of the business in terms of cloud use and adoption.
- Collaborated with all levels of the business to assess need and deliver solutions to unique problems.

Delivered a 3d sales tool to empower clients to evaluate designs for print-ability and price.
- Abstracted a licensed Wasm based 3d scene (Hoops) to create a highly interactive scene using React typescript.
- Developed a highly parallel processing methodology using step-functions and Kinesis.
- Experience with modern abstracted IAC using Terraform and aws-cdk to deliver a large and complex application.
- Utilized the c++ aws sdk and the Parasolid Kernel to deliver low latency and minimal bundle size serverless functions.

Evaluated and implemented ROS (robotic operating system) as a tool for abstracting robotic motion and control.
- Used React + three.js. to deliver a web client for the evaluation robotic motion.
- Used websockets + message bundling to synchronize client with backend
- Deployed a Ros based c++ & python backend application in k8s.

Implementation of best practice IOT solutions.
- Started and managed Eks cluster using standard tools - terraform, helm, kubectl,
- Designed and collaborated on a highly available architecture based on UNS (unified namespace).
- Built and managed a number of tool to support UNS such as RabbitMq, InfluxDb and scalable Rust transforms.
- Using Rust built a high velocity SparkplugB compliant Tcp - Mqtt server for low latency transmission of device state.

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EXPERIENCE - UNABRIDGED - PART II

ADIDAS FUTURES JR. - SR. DIGITAL CREATOR

SR.
2018 - 2021

Was core in delivering adidas 4d (a 3d printing technology to 3d print shoes)
- Married official adidas React UI libraries with a 3d scene to deliver highly interactive solutions.
- Ported the project from Redux to Redux toolkit to modernize the handling of long running asynchronous state.
- Ported the project from Js to typescript to improve robustness.

Scaled high performance services using Kubernetes.
- Developed long running job api using the Kubernetes client sdk in Nodejs.
- Contributed to numerous Kafka services c++, python, Nodejs.
- Developed Jenkins pipelines for unique and varied build scenarios per service.

Collaborated in creating a method for the real-time simulation of 3d printed midsoles.
- Created a python abstraction layer for interaction with an on prem HPC cluster for simulation storing output in Mongodb.
- Created a novel approaches for interpolating simulation output and data investigation using sklearn.
- Accelerated process through creation of custom curve fitting method using eigen c++.

Created a data-science application for the processing for real time 3d scans
- Utilized python - numpy, pandas, to process dense data to reconstruct physical stresses and attributes.
- Leveraged plotly and jupyterlab to create lightweight tool for data exploration.

M.
2017 - 2018

Developed an mvp application for the design of 3d printed shoes.
- Leveraged React + Three.js to prove our concept for web based tool to design 3d printed midsoles.
- Collaborated on minimal python backend for launching of long running asynchronous actions.
- Collaborated on what was state of the art 3d graphics paper (elastic textures) to evaluated 3d printed structures.
- Used python & c++ to generate hundreds of millions off cubic lattice combinatorially.

Evaluated and created an mvp for a novel robotic created textile.
- Created a proof of concept machine using parts from a spare cnc to weave textiles.
- Created a web based design tool using React, D3 and Three.js
- Successfully handed project off to manufacturing team and to production.

JR.
2015 - 2016

Developed c# based 3d tools to explore design and engineering.
- Ported or replaced proprietary 3d method with open source or custom solutions.
- Utilized linear algebra libraries such as Math.NET Numerics.
- Setup mvp c# api to validate web based accessibility of codebase.

Explored new design methods through what were cutting edge tools.
- Evaluated pattern generation using Processing.js
- Created a 2d - 3d tool using Processing.js

ADIDAS - BASKETBALL CONTRACT

2014 - 2015

Adidas enlisted me to support in moving some of their development process to 3D and to explore generative tools.
- Developed reaction-diffusion based outsole tool in Process.js
- Exposed myself to shader creation using Modo.
- Used grasshopper to process scan data for computational design.

ALTAIR - INTERN

2014 - 2014

Altair makes simulation and optimization software. I collaborated with engineers to go about designing a running blade for paralympian, Blake Leaper. I took the opportunity to step back into product design to learn about modern engineering practices such as topology optimization, high fidelity simulation and other methods.

KHORA INC.- STARTUP CEO

2012 - 2013

Khora Inc. was a mass-customization company I founded and took through a start-up accelerator. We built Three.js experiences for people to design their own products which we then fabricated used cnc's. This is where I cut my teeth learning to code and delivering software.