



Reskilling traditional Automotive workforce with digital skills – Embedded Software Engineer

October 2019

E-mobility, Connectivity and Autonomy are redefining traditional Auto business creating a tremendous disruption in the industry

Digital innovations driving new business models in Automotive

Traditional Automotive Industry

Focus limited to hardware and physical level innovations



Key focus areas

- ✓ Improving In-built Infotainment
- ✓ Improving Interior & Exterior design
- ✓ Optimizing vehicle performance
- ✓ Advancing safety features on physical level

Modern Automotive Industry

Building fully autonomous and eco friendly solutions

(Autonomous vehicles and Electric/Hybrid vehicles)



Leveraging connected ecosystem

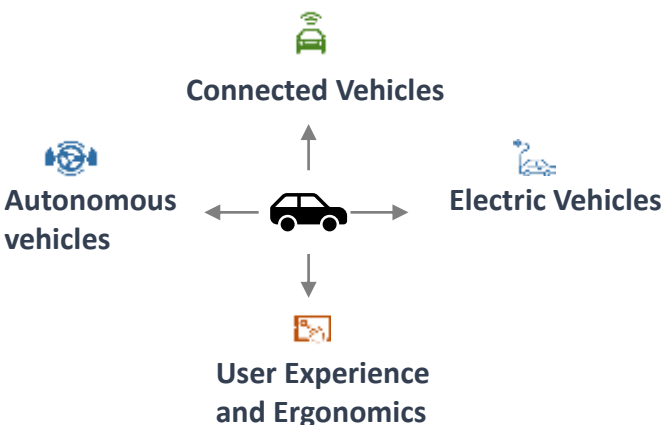
(using V2I, V2V, V2X solutions connected with IoT ecosystem)



Customer experience focused design and features

(touch and gesture based interiors, connected infotainment)

Extended focus areas



Critical Use cases in Automotive Industry



Connected Vehicles

- ✓ Vehicle Diagnostics Monitoring
- ✓ Fleet Tracking and Optimisation
- ✓ Remote Fuel Tracking
- ✓ Driver Behaviour Monitoring
- ✓ Driver Face Recognition
- ✓ Vehicle Theft Alert



Advanced Safety solutions

- ✓ In-vehicle Infotainment
- ✓ Road Hazard Warning
- ✓ Forward Collision Warning
- ✓ Over the Air updates
- ✓ Automated Accident Reporting
- ✓ Night Vision Collision Avoidance



Smart Manufacturing

- ✓ Digital Twin
- ✓ Virtual Floor Simulations
- ✓ Warehouse Optimization
- ✓ Predictive Maintenance
- ✓ Remote Monitoring
- ✓ Connected Production



Autonomous Vehicles

- ✓ Smart Parking
- ✓ Advance Navigation Assistance
- ✓ Platooning
- ✓ Blind Spot Assist

This digital disruption is having dual impact: Traditional roles are getting digitally influenced and New age digital roles are becoming more critical for creating product differentiation

Impacted Traditional Job Roles

*Safety Engineer

*Powertrain Engineer

Suspension & Steering Engineer

Hardware Engineer

Electrical Engineer

Electronics Hardware Engineer

Embedded Software Engineer

Embedded Infotainment System Software Developer

RF Test Engineer

RF Engineer

RF Design Engineer

Infotainment Validation Engineer

Infotainment Engineer

Infotainment System Engineer

Chassis Engineer

Catia V5 Studio Design/Engineer

Propulsion Systems Engineer

Engine Performance Analysis Engineer

Design Release Engineer

Calibration Engineer

Interior Design Engineer

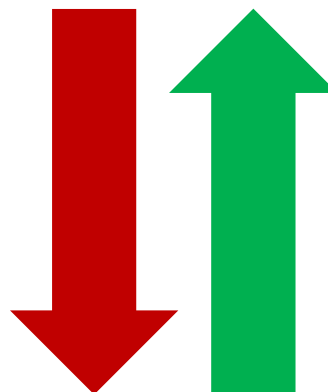
Electrical Control Designer

Vehicle Software Test Engineer

Vehicle Performance Engineer

Demand for digital
roles have increased
drastically by

30%



Traditional roles in
Automotive Industry
have declined by

14%

Critical Digital Job Roles

*ADAS Safety Engineer

*Electrical/Hybrid Powertrain Engineer

*AR/VR Engineer/Developer

*Data Analyst

Machine Learning specialist

Computer Vision Engineer

Artificial Intelligence Engineer

Hadoop Engineer

Hadoop Engineer

Big Data Developer

Big Data Engineer

Data Analytics Engineer

Data Scientist

Software Developer

Autonomous and Active Safety Simulation Engineer

Web Developer

Full Stack Developer

Java Developer

UI/UX Designer

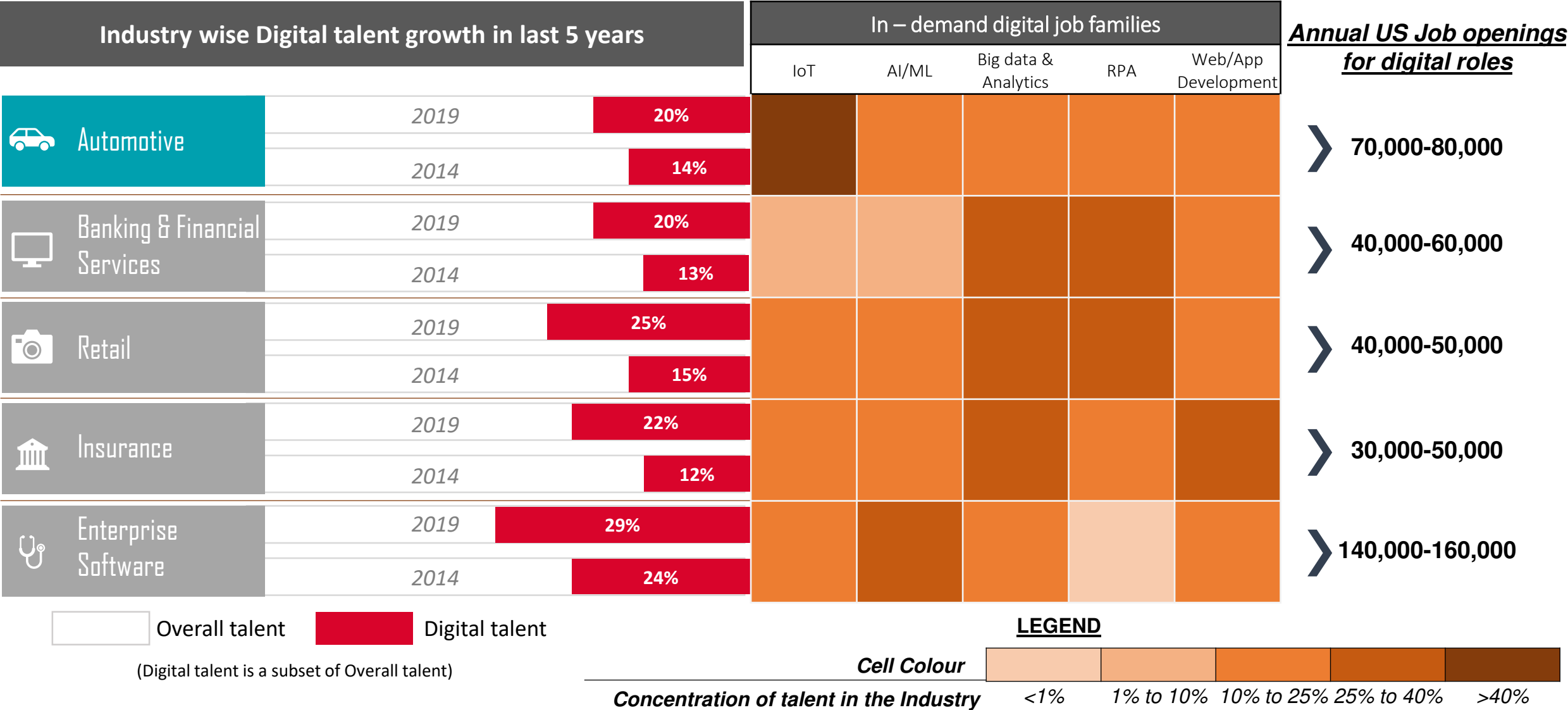
ADAS Algorithm Data Scientist

Connected vehicle Telematics Engineer

HIL Simulation Integration Engineer

*Note : Highlighted roles are analysed for showcasing Reskilling paths

However, Digitization needs across every other industry has created an intense hiring battle for digital roles making talent acquisition highly challenging

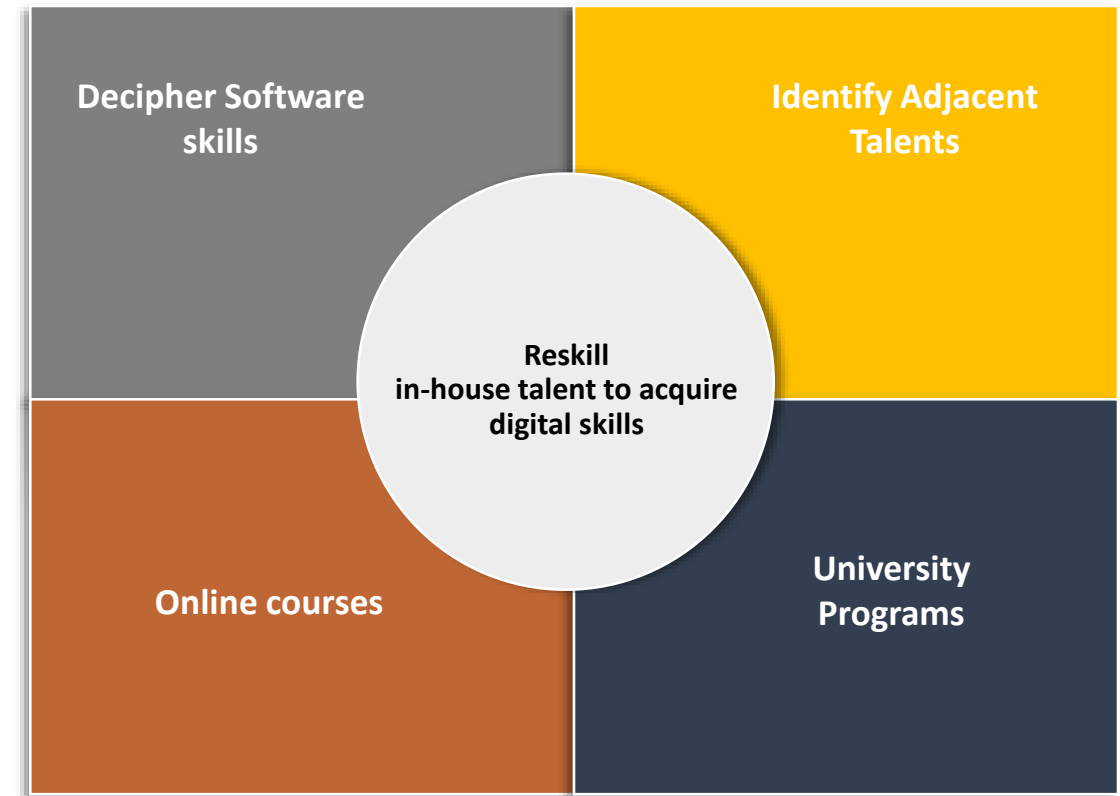
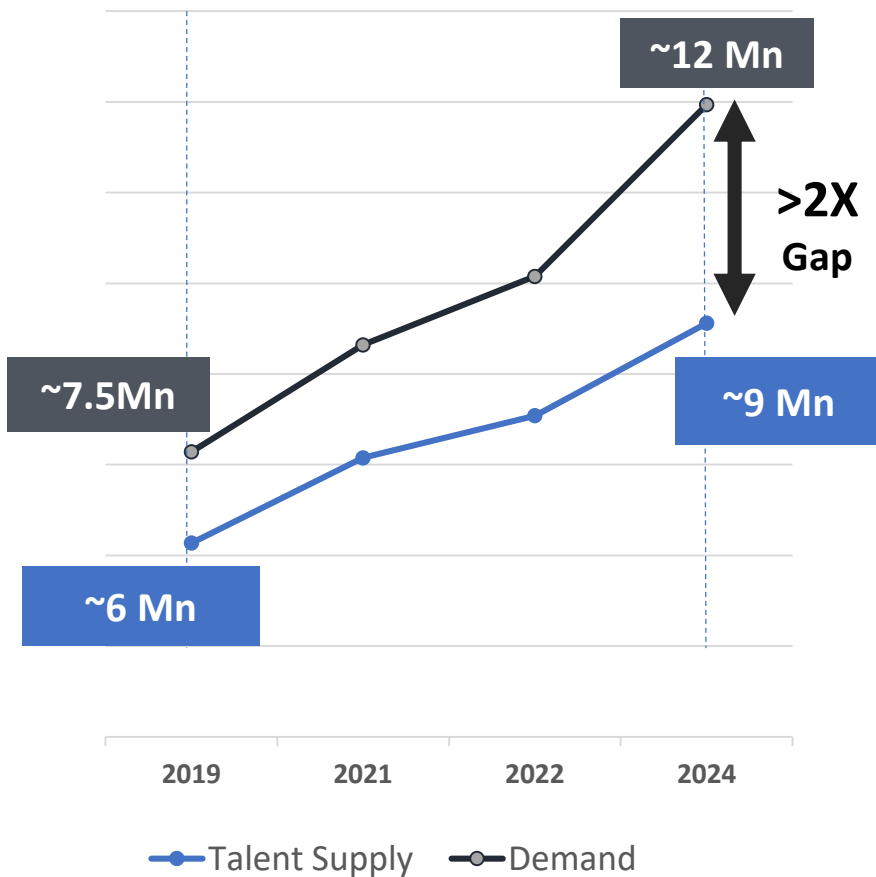


Reskilling becomes a key critical option for HR and business leaders as companies address dual challenges of hiring competition and lack of career growth opportunities for existing workforce

The supply demand gap for digital skills will continue to broaden

Reskilling the in-house workforce is vital to achieve the capability for new-age digital business models

US Digital Talent Supply-Demand Analysis

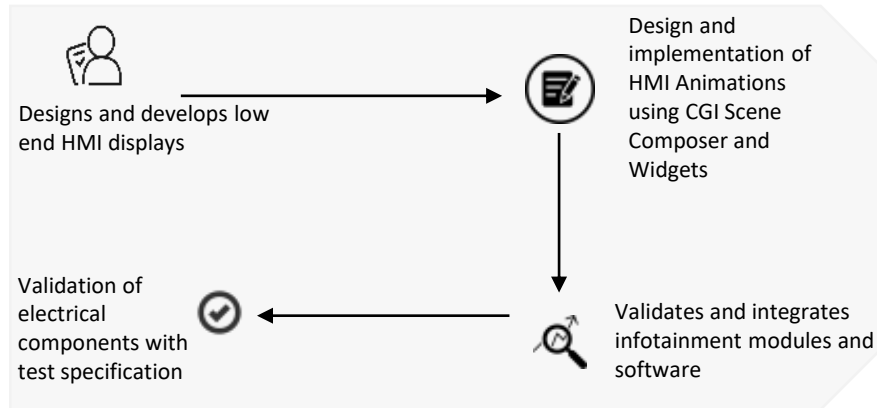


Reskilling of 'HMI & Embedded software' roles: Traditional Automotive roles are transforming and need reskilling to acquire digital skills/tools

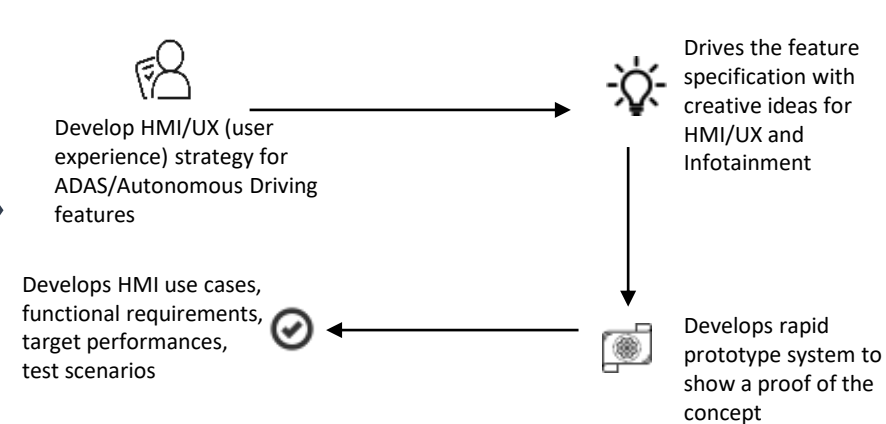
Examples of traditional automotive roles evolving due to digital transformation

Evolution of HMI Engineer

Traditional workflow/skills/tools of HMI Engineer

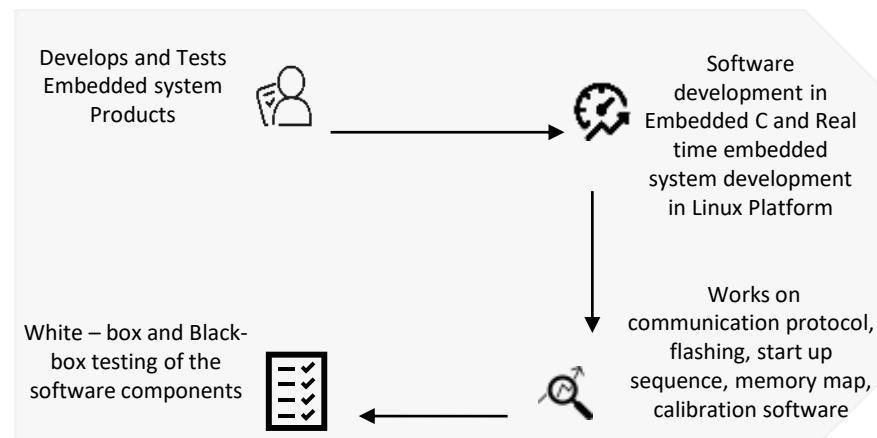


Digital workflow/skills/tools of HMI Engineer

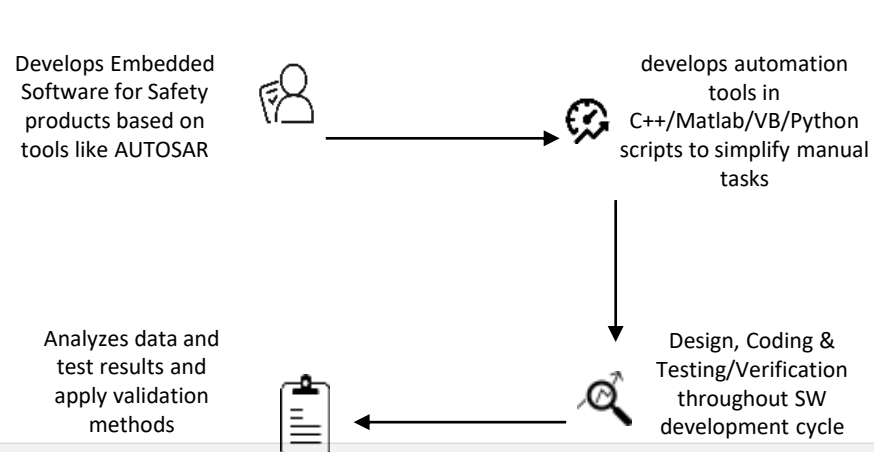


Evolution of Embedded Software Engineer

Traditional workflow/skills/tools of Embedded Software Engineer



Digital workflow/skills/tools of Embedded Software Engineer



Sample Profile

Aishwarya Yeradla

ADAS HMI Engineer
Experience in Current Role: 2 Years

Education: University of Michigan-Dearborn

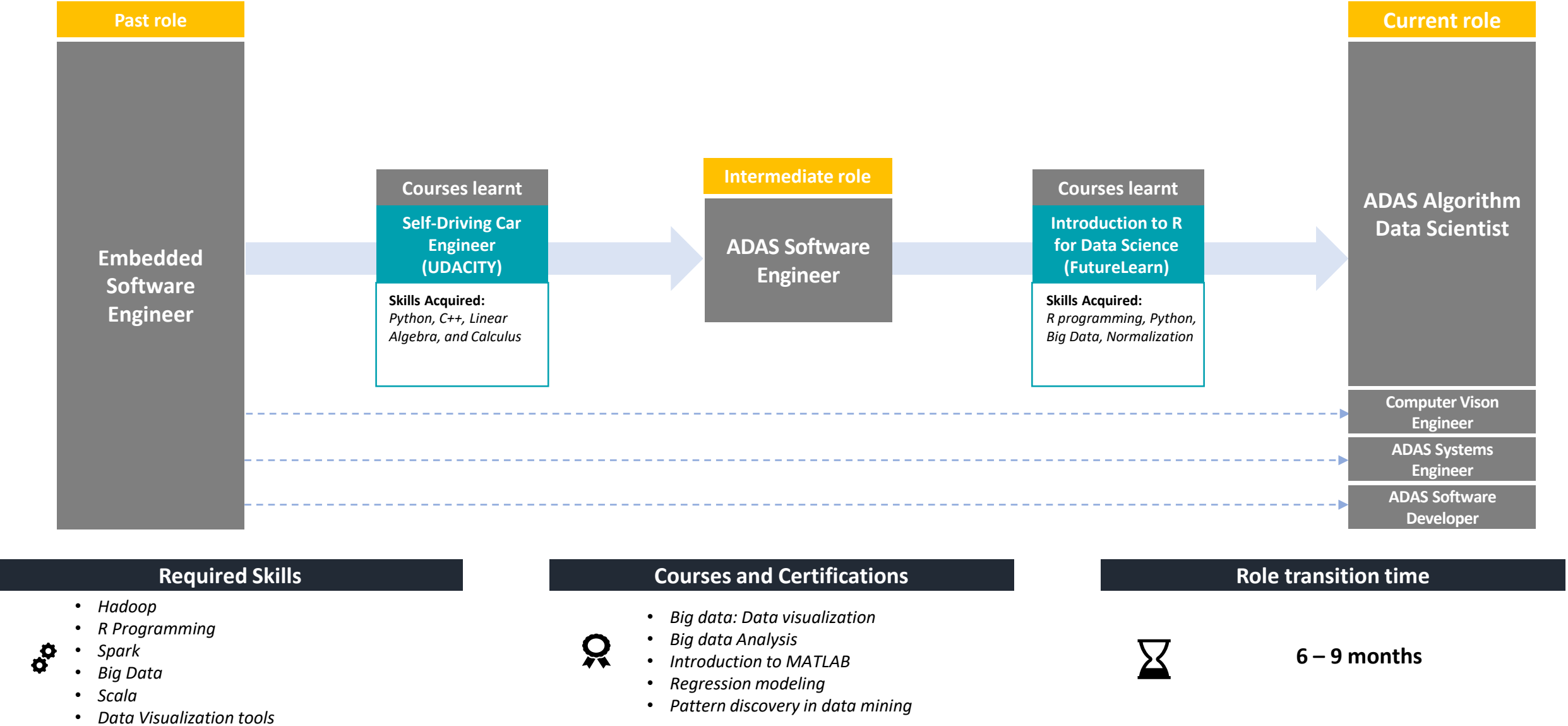
ADAS HMI Engineer

- Design and develop comprehensive test strategies based on functional and design specifications of Automated Driving and Computer Vision Applications

Infotainment Engineer

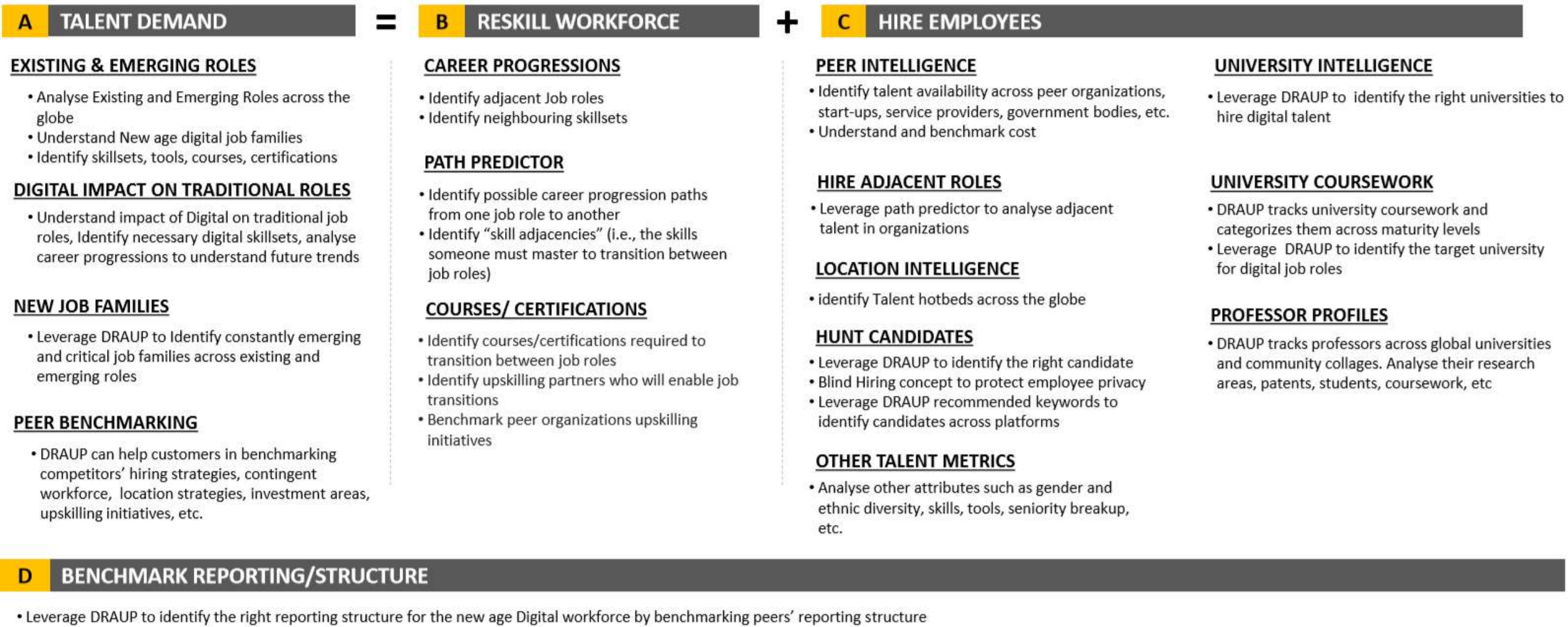
- Validated and integrated infotainment modules and software
- Worked as an infotainment engineer for both info 3.0 and 3.5C

Reskilling: Case study for Embedded Software Engineer transforming into a digital “ADAS Data Scientist” role, thus creating need for reskilling



Note : DRAUP's proprietary talent module was used to analyse multiple career paths of the above role through 'Reskilling Navigator' feature available in the Platform

Draup for Reskilling: Draup helps HR leaders understand the digital career paths of their traditional workforce and reskill them with micro and macro learning modules



Draup Reskilling is designed to address the emerging needs for an organization to provide a comprehensive assessment of career progressions for internal workforce transformation



 Role	1,000+ Job Roles	 Skillset	20,000+ Skills	 Career	2 Million+ Career Paths
 University	7,000+ Universities	 Course	40,000+ Courses & Certifications	 Professor	30,000+ Professors Partnered

DRAUP's Machine learning Models

Word2vec model: trained on 50M+ job description corpus to identify the nearby skills for a particular skill-set . The adjacent skills are added to the skills vocabulary for skill expansion to increase its volume over time.

K-Means Clustering model : used to cluster the skills identified from courses/certifications to the nearest mean , after removing of all the irrelevant skills.

Recommendation Engine : used to recommend sequence of courses/certifications that one need to take up to cover the skills gap.
It is based on the skills identified from courses/certifications and also based on popularity (rating & votes) of courses/certifications.



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