TEXAS INSTRUMENTS

Thinking about a
**CAREER IN
SOFTWARE?**

Find out why Texas Instruments' Processors team is the right place for you

When you think of Texas Instruments, you are perhaps thinking of a leading chip-making company specializing in hardware. And while that's true, TI Processors has a strong and robust software development and application team focused on solving some of the most challenging technical problems in automotive and industrial.

We believe that hardware and software advancements go hand in hand, and to give our customers seamless, integrated solutions, we need to drive cutting-edge innovations in both.

As part of the team, examples of what you get to work on

Technology Segment

Analytics	Real-time Networking	Real-time Control	IoT	Safety & Security

Product segment

Industrial automation	Machine vision & Robotics	ADAS	EV/HEV	Sensor Fusion

Deep-dive into the technology you work on as part of the Processors team

As engineers, we want to solve real-world problems in the most efficient and effective manner, but we also want to work on the latest and greatest technology out there. **As a part of our team, you get to do both.**

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> I had worked on TI processors in my previous company – and I always marveled at the elegance of their solutions. It helped me become technically stronger. So when I joined the processors team at TI it was a dream come true.
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> **- Aradhya** 99

A. Platform SW:

It's the foundational SW that enables an SoC to function. It consists of bootloader, driver, firmware, middleware, safety & security across RTOS, Linux, and bare-metal systems including those of 3P OS (e.g. QNX), 3P stacks.

Application-specific SW builds on top of this. As part of this, you get to:

› Learn IP and SoC features and how they meet application requirements in terms of arch, performance, and power

› Develop respective SW and tools in the most optimized way and upstream as applicable

› Work with 3P to port and optimize their SW on TI SoC

› Build examples demonstrating SoC & IP differentiation and entitlement

› Creat SDK that packages all SW, collaterals, and tools for customer's easy consumption

Here you learn about new standards, new frameworks, open-source components, and influence IP/SoC specification, customer system arch.

In fact, software in Processors is always more than software. You actively participate in technical customer discussions and Systems & Architecture discussions and plow these learning and insights back into the next SoC design.

If Linux is your passion, TI is the right place for you.

Our Linux strategy rests on making all our contributions go upstream. Our community focus via BeagleBone connects you with 100s of like-minded engineers whose passion is to innovate and share!
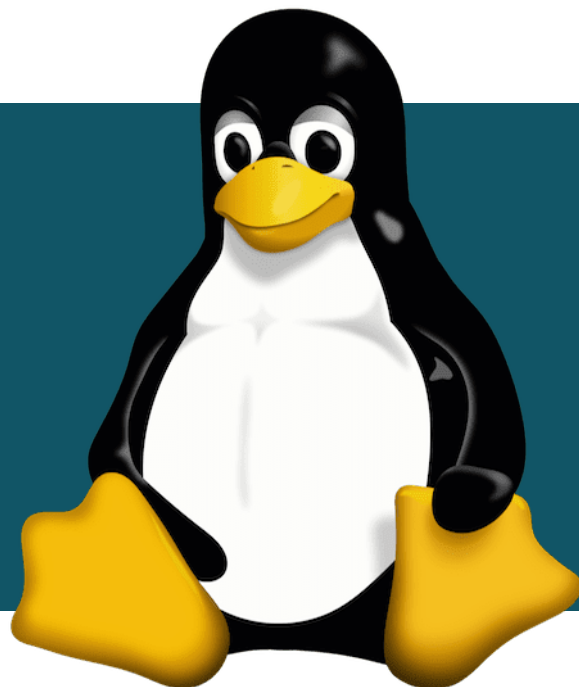
B. Deep Learning/Vision/Sensor fusion/Edge AI:

TI EdgeAI technology offers a practical embedded inference solution for next-generation vehicles, smart cameras, edge AI boxes, and autonomous machines and robots. You get to work on:

› Cutting edge neural networks to develop an optimal and power-efficient inference solution

› Opensource run time frameworks for training and inference – ONNX, Tensor Flow, TVM, and many more

› Working with SoC architects and designers to make next-generation hardware accelerators

› Developing tools that ease customer's adoption of our products

› Build system-level solutions integrating different sensors (e.g. Camera, Radar), Perception stack, middleware (e.g. Gstreamer, ROS, openVX), data processing (e.g openCV, HW accelerated processing), Codecs, sensor fusion and demonstrate a live real-world application like Human pose estimation, People detection, Image classification, Object detection, Semantic segmentation, autonomous moving robots etc

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My journey in Deep Learning started with a simple perceptron in my very first class on Introduction to AI in college and this went on to Transformer-based CNNs. The second chapter of my journey started with TI where I got to implement these CNNs, which would be used on chips meant for Autonomous Cars and Robots. Deep learning has come a long way from the foundations of backpropagation in 1960 to Transformers and General Adversarial Networks in recent times. At TI being surrounded by experts in Deep learning, I get to work in a similar environment to what I enjoyed in the company of my professors and classmates.

- Febin

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And there's more…

You also get the opportunity to integrate Edge AI solutions with real-time sensors to create fusion applications – helping you learn the end-to-end process.

Thinking about a career in software?

C. Networking and Connectivity:

In today's digital and connected world, network and connectivity technology plays a key role. We have several SoC targeted towards this domain - from automotive networking like central gateways, domain controllers, zonal gateways, and telematics units, to industrial networking which includes factory automation, Home and Building automation IoT gateways. Some of the work in this domain include:

› Ethernet and Time-sensitive network, Industrial protocols, High performing packet accelerator
› Security – IPSEC, TLS, HSM and many more, Secure storage and key management, Cybersecurity
› Firmware upgrade, Cloud connectivity – AWS, Azure
› Build system-level solutions integrating different IOs, optimize routing and packet processing stacks, and demonstrate a live real-world application

D. Mainline Linux and Community based development:

Imagine buying a smartphone that does not allow you to upgrade to the latest Android or iOS release!

Our SW strategy rests on working on Open Source and mainline Linux. TI's support of the mainline Linux kernel ensures an efficient development environment and avoids much of the disruption and distraction that can accompany a migration to a new kernel. Check out more details of the TI Linux strategy HERE

Working on Linux at TI means:

› Development of drivers and framework in Linux kernel and userspace.
› Upstream your SW contribution to mainline, and while you do that, you get to interact with community developers and maintainer
› Get a broader perspective of SW design and programming

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> I was surprised at the thriving Linux culture at TI! As an engineer you want your innovations to touch as many people as possible - knowing that we work on an open-source platform feels like you are contributing to the advancement of knowledge all around!
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> **- Vaishnav**
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TI's India engrs enable cars to park themselves

Akhil.George@timesgroup.com

If you've ever panicked at the thought of being forced to parallel park, you're not alone. There are many among us who have trouble with that vehicular manoeuvre. But, there's technology now that can help us do it easily.

Jayant Thakur, director processors software at Texas Instruments, says his team in India has spent the last five years developing surround view technologies. "There are cameras around the car, and when you're trying to park or drive in a narrow lane, the cameras provide a stitched view to aid the driver," he says.

More recently, the team has used machine learning and deep learn-

66 Now, you just have to get to the parking spot, step out of the car, press a few buttons and let the car park itself.

Jayant Thakur | DIRECTOR, PROCESSORS SOFTWARE, TEXAS INSTRUMENTS

ing tech, says the team had to deal with a large amount of data from a variety of sensors. "From a processing perspective, there are two parts – perception and navigation. Our main challenge is that we have a lot of sensors, like radar and lidar, whose raw data has to be massaged so that we can extract some useful information out of it. That's be-

The processor's open source strategy does not end with Mainline Linux. We go a step further and contribute to community development via BeagleBone – a journey that started a decade ago with TI's AM335x, and only progressed further with BeagleBoard AI based on TDA4vM.

These are some of the domains and technologies that our software team focuses on. In addition, there is multimedia, vision analytics, community RTOS like FreeRTOS, Zephyr, and Azure, and a lot more.

Our culture makes the difference

While it is great to work on advanced technologies and challenging problems, work feels rewarding only when we are excited to wake up each morning and be part of a team that challenges us to be our best.

At TI, we encourage our people to push themselves and to push each other by questioning the status quo, understanding the big picture, connecting the dots, and being invested in the success of what we build.

But it's also a place where you don't have to figure things out on your own – we pride ourselves on our mentorship culture.

You will have the opportunity to be mentored by industry leaders and also learn from your peers and colleagues across teams.

Learning continuously is part of who we are.

We think of ourselves as entrepreneurs – where every engineer owns their work end to end and every individual matters. **You remain an important part of the overall machine –**

- **Agility**
- **Learning**
- **Questioning**
- **Commitment To Excellence**
- **Customer Orientation**

      are values we cherish.

Our open work culture promotes cross-team collaboration.

We often see engineers go beyond their job roles and do more. Pratyush, an engineer in our team, who was working on developing a camera driver went ahead and created a small application that integrated a deep learning library and display. This application found its way into TI's EdgeAI Processor SDK and now there are several customers using it!

Building a rewarding career

If you love technology then you can pursue a technical career path, supported by our industry-defining, robust tech-ladder ecosystem.

The TI Tech Ladder allows you to carve a technical career path with increasing levels of responsibility & mentorship and influence on the company's technical direction.

There is a wider innovation culture that guides and coaches you to excel technically. You can:

File Patents

Win Awards and Recognitions

Work on conference paper submissions

Publish in Leading Tech Journals

and much much more!

If you enjoy people management, then you can choose the managerial path.

As part of the managerial team, you have the opportunity to lead and manage a team. It may start with leading a small team, and grow into managing global mandates out of India. Managers along with our technical experts drive TI's strategy.

Many of our engineers follow both paths where they spend quality time being hands-on solving key technical problems while managing and mentoring a team and multiplying their impact.

Engineers are encouraged to work on various domains and learn systems beyond specific modules. Over years, engineers rotate among various teams and learn all aspects of SW development through customer support.

> For me personally, the tech ladder is a journey and not the final destination. It comes with certain expectations that never let you settle for what is enough in your current job but push you to go beyond what is expected of even the next level. The TI tech ladder rewards people for stepping out of their domain and trying to solve other technical challenges as well.
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> **- Soyeb**

Our world outside work

We are creators and innovators. We enjoy the thrill of chasing a tough technical problem, but we also believe in a healthy work-life balance.

Texins, our on-campus recreation, and sports facility, is a place to unwind for many TIers – whether that's doing yoga, playing badminton or basketball, or jamming with your friends.

Beyond work, we also have several clubs and networks that allow you to pursue other passions and interests including cycling, DIY, diversity initiatives, and volunteering.

We are also committed to employee well-being – TI India was the first company to launch an employee assistance program that supports employees' physical and mental health. From flexible timings, floating holidays to mental health leave, we encourage our people to lean on our support systems for their overall well-being.

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> I have the freedom to plan my day in a way that works best for me. We all have deliverables and deadlines, but we also have the flexibility to decide how to balance our work and personal time. As someone who loves to play badminton at 6 pm, I appreciate this flexibility,"
>
> **- Dominic**

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