



Unary Computing on FPGAs for 5G Cellular Business Executive and Co-founder Search

The UMN is seeking a business executive to partner with research team members to develop a plan to commercialize an invention coming out of research via the formation and launch of a startup company.

Overview

A University research team has developed a processing technology for implementing select types of FPGA blocks requiring less area, lower power, and shorter processing times.

The market for 5G applications is expected to grow significantly in the next decade. Major 5G players such as Qualcomm have traditionally used ASICs because of the economies of scale. However, there are a growing number of mid-sized companies that are developing FPGA solutions for 5G modems. The number of small to mid-size companies in this area is expected to grow significantly because; 1) The industry adopted the OpenRAN project, which is attempting to make 5G similar to "open source" software where different players can contribute in a plug-n-play fashion. Companies no longer *have to go* with one vendor in all aspects of their infrastructure and 2) the potential applications of 5G are expected to grow. Today, applications include base stations used both in regular cell towers and in public venues where hundreds and thousands of people simultaneously live-stream an event. Furthermore, the emerging Internet-of-Things is going to open up many more opportunities for 5G and the associated equipment to support the infrastructure.

Current progress, milestones or goals

The team has implemented FPGA blocks such as FFTs and FIR filters with less area, lower power, and shorter processing times. They also completed more than 130 Voice of Customer interviews with managers and engineers working in this area. The discussions and the feedback has validated the value of this technology in their area. During the discussions, the team identified companies as potential partners.

Industry sector(s)
Engineering and
Physical Science

Stage in the pipeline
Stage 2; Opportunity
Assessment

IP Status
US Utility Patent
Granted Sep 2020
US 10,763,890 B2

Title: Computational
Devices using
Thermometer Coding
and Scaling Networks
on Unary Encoded
Data

Inventor Founders:
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(PhD student)

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Two promising paths to commercialize in the 5G application area have been identified. The first is partnering with a mid-sized wireless company and integrating the technology into their current designs and work flow. The other is partnering with a large company to be included in their current product solutions. Both pathways are attractive fits for their customers and business models, bringing highly desired capabilities to their product portfolio.

Additional Information

We seek a qualified business leader to identify how best to bring this exciting advancement in semiconductor technology to market. This may be a part-time role in the beginning stages of the company launch with a transition to a full time role at the appropriate time.

Activities, tasks and responsibilities

- Set up and establish the business. Develop the business plan and business model with the help of the UMN research team and the Discovery Launchpad resources
- Finance the business with customer contracts or raise capital as needed
- Develop high-quality business strategies and plans
- Operate and scale the business, drive the business to success
- Review financial and non-financial reports to devise solutions or improvements
- Lead and motivate subordinates to advance employee engagement develop a high performing managerial team
- Maintain a deep knowledge of market and industry trends
- Establish a board of governance

Skills and abilities

- Have the relevant experience in the semiconductor business
- Have an entrepreneurial mindset with outstanding leadership skills
- Leadership skills to pull together the resources to operate the business
- Experience in developing successful strategic partnerships

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- Experience in developing, planning and implementing successful strategies
- Be familiar with diverse business functions such as marketing, sales, finance, human resources, etc.
- Create, communicate and implement the vision for the company
- Be effective in communicating and have strong public speaking skills
- Possess outstanding organizational and time management skills
- Ability to analyze problematic situations and occurrences and provide solutions to ensure company survival and growth
- Excellent interpersonal and leadership skills
- Willing to roll up their sleeves and dig

Qualities preferred

- Experience in successful startup leadership
- Experience in raising early stage capital
- Proven track record of building successful products and high performing teams from the ground up

Compensation

Compensation for this role will be determined by the founders of the new company. Candidates for this position should expect to have considerable runway.

- The University of Minnesota and the Technology Commercialization Office will not provide nor be responsible for any cash or non-cash compensation for this role.
- The primary compensation may be consistent with typical startup compensation strategies including an equity position in the company in the form of founder's shares.
- Percentage of ownership, vesting timelines and other details of an offer will be negotiated with the other founding team members.
- All costs incurred in this position will be your responsibility.

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- Expect any future cash or monetary compensation to start below market. The performance, success and trajectory of the company may influence an increase or acceleration of benefits.
- It will be expected that the person pursuing this role will sign an MOU that includes, at a minimum, the items above.

If you are interested in this opportunity please contact Russ Straate at rstraate@umn.edu

