AMMAR HUSAIN

NAVIGATION PERCEPTION LEAD
SWE - L5

Google Internal
Resume Confidential
go/ammarh-gresume
go/ammarh-extended-resume

EDUCATION

Carnegie Mellon University
MS in Robotics Systems Development - 2013
Univ of Illinois at Urbana Champaign
BS in Systems Engineering - 2010

PERSONAL

Strong and experienced software with a deep background in robotics and machine learning. I am looking to shift gears into leadership and management roles for the ML domain through my technical expertise and focus toward user needs.

GOOGLE EXPERIENCE

EVERYDAY ROBOT PROJECT — Jan '19 - Present

De facto lead for the perception system that enables robot navigation. Work cross functionally to build robotics & ML technologies and the general tools & infrastructure that powers the robot.

Navigation Field Triage

Created a principled process to address field bugs to address user needs go/proxy-nav-triage-retrospective

- Demonstrated initiative and provided technical leadership, from conception to production, by kicking off an initially ambiguous but eventually fruitful collaboration. This established a procedural flywheel for addressing incidents & collecting navigation field statistics.
- Persistently pitched the idea of a principled process conducive to scaling up 10X robot hours while capturing 100X field data to leadership. Worked with michellecrum@ to recruit a triage champion.
- Created a living triage protocol, taxonomy for categorizing incidents and trained several TVCs..
- Led by example to influence SWEs across different teams to invest in simplifying debug complexity and increase tools usability such that a central triage team was established in a SW wide OKR resulting in at least 3 dedicated Proxies and >1200 Proxy field bugs triaged in <2 years while continuing to grow rapidly.

Learning based Navigation Perception
Championing ML technologies for robot navigation go/proxy-navigation-perception-features

- Leading single handedly a multi-year, long time horizon & complex initiative that upgrades the navigation perception system through building, advancing & integrating ML technologies. Proxy robots drove an average of 9.5-15.5 miles per week in the last 2 quarters and consequently need to leverage data driven methodologies in order to align with Proxy's strategic staircase.
- Implemented integration of image segmentation labels with HiFi map surfels by ingeniously devising association methods without formal semantic storage within HiFi maps.
- Persistently managed collaborations on a long time horizon effort with minimal supervision. The first step of this vision is now within 1Q away with promising results to solve or mitigate 5 of the current set of 9 key navigation capability limitations thereby directly impacting to enhance >50% of them.

message_sync Library
Eliminates the need to write boiler plate & potentially bug-ridden synchronization logic, reduces module statefulness. go/proxy-msg-sync

- Interviewed several stakeholders to collect their use cases, researched several solutions and made several judgment calls to create a design that balanced feature richness with system complexity. Gathered peer feedback through a design doc and presented it at SW Design Review.
- Fully owned & implemented the library in its entirety. Added exhaustive unit test coverage for not only the runtime checks but also compile test assertions of the library.
- Eliminated the need to write boiler plate & potentially bug-ridden synchronization logic and reduces module statefulness. Additionally it promotes memory hygiene through its heavy adoption of Active & WeakMsgPtr.
- Deprecated the usage of: message_synchronizer, TransformSyncBuffer & AsyncTransformSyncBuffer by providing a unified yet powerful interface.
- Evangelized the adoption of the library through hands on migrations, 1:1 trainings and extensive documentation in a Proxy-TotW#9 which led to its usage in >20 system modules and growing.

PRE-GOOGLE CAREER

MARBLE INC — *Jul '18 - Nov '19*
Technical & Product lead for robot perception

APPLE INC — *Jan '15 - Jun '17*
Senior Software Engineer in the Autonomous Systems SPG.

ROBOTICS INSTITUTE @ CARNEGIE MELLON UNIVERSITY — *Jan '13 - Dec '14*
Senior Robotics Software Engineer

SKILLS & AWARDS

- Product Development: Proven ability to build user centric technologies.
- Presentation, storytelling and public speaking
- Technical Toolkit: C++, Python, git, Jupyter, Colab
- 5 Patents filed
- Stanford Professional Certificate in Artificial Intelligence
- Proxy Q1'19 MVP award
- 2 spot and 2 peer bonuses