



# Neutrino

**FIRST Robotics Team #3928**

## **Chairmen's Essay**

*2014*

In the beginning there were three FRC teams, but then joined Team Neutrino in 2012. The fourth team in Iowa, now out of 6, Team Neutrino spreads the FIRST culture among its own members as well as throughout the community.

Team Neutrino proudly inspires our own students and considers their progress our greatest accomplishment. Each of the 17 team members found a unique niche, and learned many things from their experiences being a part of Team Neutrino. Students of Team Neutrino engage in many technical areas such as design, machining, welding, programming, and Computer Aided Design as well as excelling in non-technical areas including writing and graphic design. As one student says, "Now, when given the tools, I can build anything."

Team Neutrino's ambitious drive trains provide unique and powerful learning experiences for our members. Inspired by seeing another FRC team's swerve drive at an off-season competition, we decided to implement it into our robot with a little twist during our rookie year. A new experience for our team, our modules were unique to any past swerve drives in that the motor that drove the module was located inside of the wheel. Continuing the tradition of challenging drive trains, we designed a "butterfly" drive train in our second season. Not only a major design and learning challenge for our students, the modules were also very useful during the robot rounds and won us the "Innovation in Control" and "Excellence in Engineering" awards. This year, we decided to use the same overall design, but we improved it to fit this year's challenge. During the building of the modules, we paired experienced upperclassmen and mentors with the freshman to take advantage of knowledge gained from the previous years.

Another characteristic that is prominent in Team Neutrino is our ability to be resilient and to be able to bounce back from any problem. In our rookie season, we encountered a huge challenge while building our robot.



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After a rule clarification regarding the bridge, the design we had was not applicable. Not wanting to back down easily, our team quickly revised the old idea and worked hard on getting a new design. With only a few weeks of build season left, we pushed ourselves and finished the robot on time. With this robot, the team went on to win the "Highest Rookie Seed" award as captain of the 5th alliance.

These experiences complement what students learn in the classroom and provide a stepping stone to their future careers. Beyond the robot, students also manage a website, twitter, Facebook, and instagram accounts. While most students have prior experience in social media, running the team outlets provides the knowledge necessary for running a company account. 100% of the team has graduated high school and continued onto the STEM field while using their experiences in their careers.

Not only does Team Neutrino benefit its own members, it provides a place for over 13 FIRST LEGO League teams across Story County to continue with their STEM experience. For example, the Flying Monkeys FLL team, winners of the first ever "Global Innovation" award, graduated from FLL to FRC recently, and continued onto Team Neutrino, along with 7 other FLL alumni. For some FLL teams, this transition kept them burning with passion for science and STEM as a whole. Team Neutrino reaches out to the FLL teams outside of Story County by volunteering at several FLL competitions, including two regionals and the Iowa State Championship for the past two years.

This is not to say that one must be involved in FIRST to be helped by Team Neutrino. The team has also volunteered in the local Talented and Gifted (TAG) summer school program by providing elementary and middle school students with experiences building and programming LEGO mindstorms robots. Every year at the end of the build season, the robot is unveiled, which allows the sponsors and the community to see what we have accomplished. The team has demonstrated their robot prowess to the public in other ways as well, such as the local festival of VEISHA and the 4th of July parade.



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Team Neutrino has overcome several obstacles since our rookie year. During the first year, the team formed a partnership with Ames High School. After that first season, we lost that support and partnership which was the primary work space for the team. This setback was troubling to say the least, yet thanks to the generosity of the local university, hope was not lost. The team formed an even stronger partnership with Iowa State University (ISU) which provided the team an access to Boyd Lab, the ability to invite new members from other high schools in Story County, and many more resources. With these new resources, Team Neutrino has been able to grow beyond what we had ever imagined.

Despite our short history, Team Neutrino has set and achieved high standards for having a successful team. For the past three years, we have had a highly competitive and innovative robot that has performed well at each competition, garnering many awards such as "Excellence in Engineering" in addition to the other awards previously mentioned. Our outreach to the FLL teams in Story County has created a mutually sustainable relationship. Each student comes together to aim high!