



## Certificate Junior Research Assistant

Mr. Daniel Felipe Ordonez Apraez joined our company on October 10, 2018 and was part of the Robotics Group as a Junior Research Assistant employed.

In this function, Mr. Ordonez Apraez essentially performed the following research task:

Conceptual design, implementation and evaluation of approach to handling of plastic bags (deformable materials) using a two-arm robot and 3D vision guidance.

## This included:

- Detection of general 3-dimenstional bag structure.
- Characterization of relevant structural features of the bag.
- Generation of favorable grasping points.
- Autonomous generation of manipulation sequence.

In addition, Mr. Ordonez Apraez was entrusted with the following tasks:

- Documentation and knowledge transfer of bag-handling approach to system integrator for industrialization
- Implementation of development platform (ROS, PCL, industrial robots, sensors) including e.g.
  - o packages for light-weight cartesian task planner,
  - Robotiq 2-finger-adaptive grippers control package
  - o force sensor utility functions

Mr. Ordonez Apraez achieved outstanding successes as well in research as in technical implementation.

Leverkusen, 29. August 2019

Invite GmbH CHEMPARK Geb. W 32 51368 Leverkusen

Geschäftsführung: Dr. Armin Schweiger

Aufsichtsratsvorsitzender. Dr. Uwe Stelzer

Sitz der Gesellschaft: Leverkusen

Amtsgericht Köln HRB 6861 USt.-IdNr. DE269982470 Steuer-Nr. 230/5740/1807



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He has an excellent, always available and extensive expertise and has expanded his skills beyond the required level independently and systematically.

He distinguished himself in the independent performance of his tasks by a very high degree of commitment and reliability. He was always able to convert complex facts into practical solutions in an excellent way. Even under extreme stress, he always succeeded in achieving excellent results. He also faced new challenges at all times with a high degree of enthusiasm.

After careful consideration of all essential advantages and disadvantages, he always made his decisions clearly, with a great deal of foresight and a high degree of responsibility.

He was able to integrate himself very quickly into the existing working environment and, thanks to his exemplary ability to work in a team, made a significant contribution to successful cooperation. His strong ability to reach compromises in an appropriate manner even in conflict situations always led to a successful and result-oriented way of working for the team.

In organizing his tasks, he proceeded systematically and well structured. He benefited from his quick comprehension and his strong capacity for networked thinking. He was always open to new challenges.

Mr. Ordonez Apraez distinguished himself in the presentation of facts through extremely skillful, precise and well articulated formulations. He always worked out the essentials and illustrated this through the use of appropriate media, the use of which Mr. Ordonez Apraez mastered convincingly.

He was always characterized by a friendly, open and sympathetic nature. This has earned him an extraordinarily high level of recognition and esteem among his superiors and colleagues.

All in all he distinguished himself as an extremely valuable, competent and reliable employee, who always solved even the most difficult tasks excellently due to his high professional and social competence. Through his performance, he has always fulfilled the trust placed in him in every respect to our complete satisfaction.



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The fixed-term employment contract of Mr. Ordonez Apraez ends at the end of the agreed period on August 31, 2019.

We greatly regret his resignation and thank him for his extremely valuable cooperation and outstanding achievements. We wish him much success and all the best for his future professional and private life.

Invite GmbH

**Future Manufacturing Concepts**