Detailed responses and a list of changes

We thank the reviewer for carefully accessing the manuscript, for the helpful comments, for the positive judgment about our study, and the specific questions and suggestions to improve the manuscript. We have carefully worked to cover each issue raised by the reviewer and revised the manuscript accordingly.

The following list of changes has been compiled such that it contains all changes to the manuscript. This should possibly remove the problem of having to cross-read two documents.

❑ Comments from reviewer are shown in red
❑ Answers to the reviewer are shown in black.
❑ Text parts from the revised paper are shown in blue **(new text is presented in boldface).**

Reviewer#1

The authors focused on bio-inspired adhesive feet of climbing robots for smooth vertical surfaces. The advantages and disadvantages of spatula-shaped feet and mushroom-shaped feet in substrate surface, robot mass, climbing direction, adhesion force, and reusability are described and compared in detail. Spatula-shaped feet are suitable for heavy climbing robots as they provide an adhesion force on a shear force axis. In contrast, mushroom-shaped feet provide an adhesion force on the normal force axis. Spatula-shaped feet have apparently higher reusability but the climbing angle of them is limited, Moreover, the mushroom-shaped feet could climb in all directions, providing all-directional adhesion. This study would guide roboticists in selecting the right adhesive foot to achieve the best climbing ability for future robot developments.
Before accept for final publishing, several crucial references are recommended to add in to increase the whole paper's integrity. Corresponding comments based on the papers should also be given. Those papers are:
1, Kellar Autumn, Yiching A. Liang, S. Tonia Hsieh, Wolfgang Zesch, Wai Pang Chan, Thomas W. Kenny, Ronald Fearing, Robert J. Full. (2000) Adhesive force of a single gecko foot-hair. Nature 405, 681-685. About the adhesion force of gecko setae (Line 79-80).
2, Kellar Autumn, Metin Sitti, Yiching A. Liang, Anne M. Peattie, Wendy R. Hansen, Simon Sponberg, Thomas W. Kenny, Ronald Fearing, Jacob N. Israelachvili, Robert J. Full. (2002) Evidence for van der Waals adhesion in gecko setae. Proceedings of the National Academy of Sciences. 99, 12252-12256. About the evidence for van der Waals adhesion in gecko setae (Line 29-30)
3, Liangti Qu, Liming Dai, Morley Stone, Zhenhai Xia, Zhong Lin Wang. (2008) Carbon Nanotube Arrays with Strong Shear Binding-On and Easy Normal Lifting-Off. Scinece 322, 238-242. About the strong shear adhesion of carbon nanotube arrays inspired by gecko (Line 76-77)

Our answer: We thank the reviewer for the positive feedback and the suggestion. We have added corresponding comments based on the papers and references to the manuscript.

1 INTRODUCTION

[…] By contrast, the dry adhesion in spiders and geckos is achieved by deformable setae with substrates, which generates an intermolecular adhesion force between the setae and surfaces (Arzt et al. (2003); Tian et al. (2006); Bhushan (2008); Autumn et al. (2014)). **In addition to deformable setae, Autumn et al. (2002) demonstrated that van der Waals forces are also responsible for the dry adhesion of gecko setae.** […]

2.1 Spatula-shaped

[…] **In contrast to the aforementioned robot spatula-shaped foot, the natural gecko foot has about half a million setae, each of which contains hundreds to thousands of spatulas. The spatulas have an average diameter of 200 nm and an estimated adhesion force of 0.4 µN (Autumn et al. (2000)**; Persson and Gorb (2003); Ge et al. (2007)). Carbon-nanotube-based synthetic gecko tapes consist of thousands of synthetic spatulas with an average diameter of approximately 8 nm **which can generate strong adhesion forces. They can adhere more than a natural gecko foot nearly ten times (~ 100 Ncm^{-2})** (Ge et al. (2007); **Qu et al. (2008)**; Schaber et al. (2015)). […]
