Robot Fundamental and Kinematics

Gyrobot

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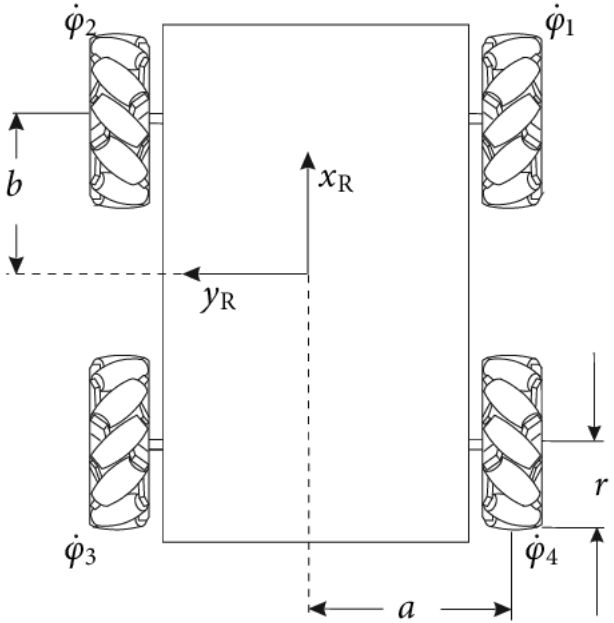
Index

Problem statement

To Design a Device for Film Making based on Gyro Technology and Robotics



Objective

1. Device will allows user’s digital camera to rotate smoothly along an axis.
2. Device will follow the user while recording / filming ..
3. Camera can move in 3 axes.
4. Provide user access to move device in all axis.
5. Provide access to a user to maintain distance from Bot manually.

Literature Survey

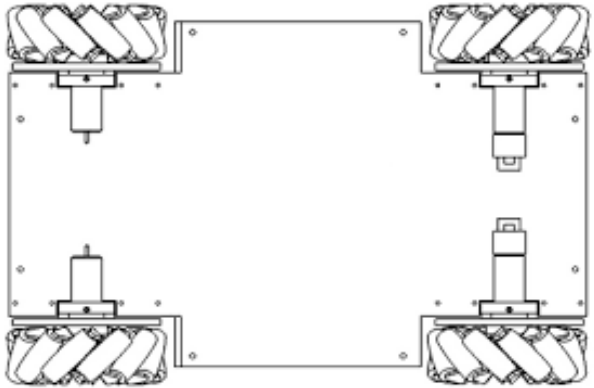
Sr. No	Research Paper	Author	Publishing year	Finding
1	Practical Applications for Mobile Robots based on Mecanum Wheels	Florentina Adascalitei	January 2011	How to use Mecanum Wheels
2	Analysis of the Gimbals Platform for the Three Degrees of Freedom using Differential Equations	SUDHANWA KULKARNI , AKASH MOHANTY	May 2013	Working Of Gimbal
3	Robotics Controller: A Literature Survey	Prashant Badoni	October 2015	Controlling System in Robotics

Components

1. Stepper Motor - 5
2. Stepper Motor Driver - 1
3. Servo Motor - 2
4. Mecanum wheels - 4
5. Arduino uno - 1
6. Arduino nano - 1
7. Battery set - 2
8. Gyro sensor - 1
9. IC 7805 - 1

Working Principle

Our robot is going to be using two types of mechanism. First Gimbal mechanism and second is wheel robot. We are going to use gyro sensors and Stepper Motor for gimbal mechanism. We are also planning to use mecanum wheels in base mechanism for all direction access(X and y-axis). We are going to use arduino for programing both mechanisms, for Z-axis we are going to make sliding mechanism, using belt rotation.

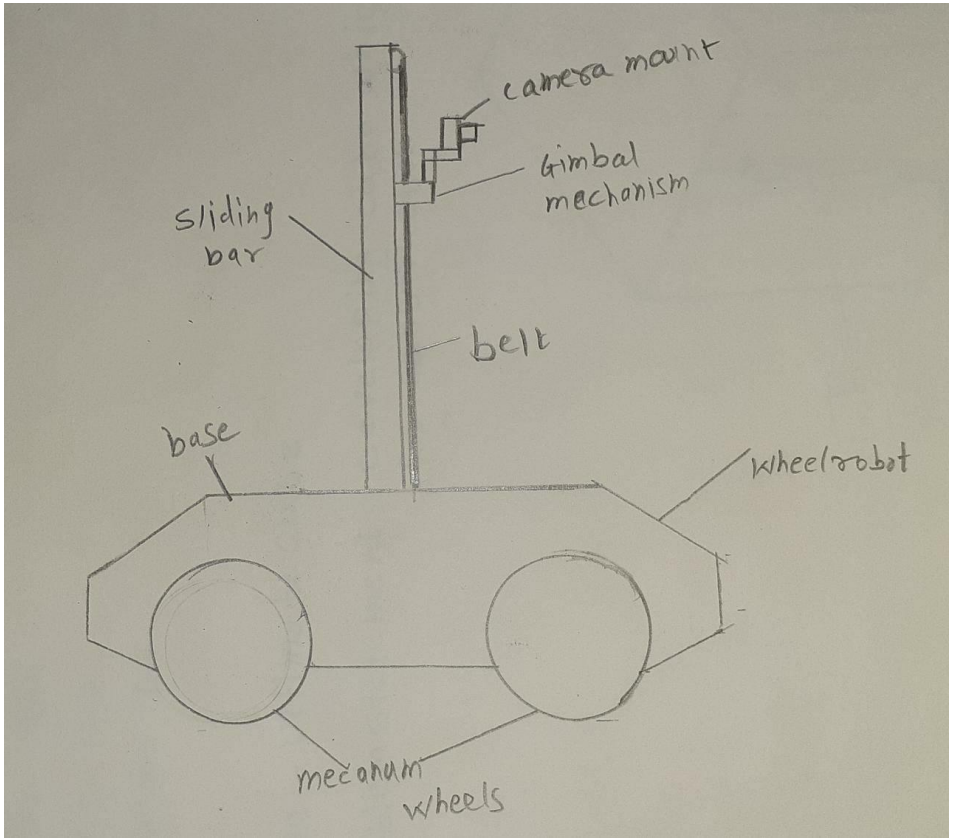


For user side we are going to make an application which can give user access to handle our robot in efficient way.

Design

This is our basic design for project. there is one all direction robot which Can provide all direction rotation.

There is one sliding bar is attached for gimbal movement which is moved by belt mechanism.



Application

1) It can improve your video making experience .
2) We can also use for surveillance.
3) Use for filming such places where people can not enter.
4) For Vehicle video making.
5) Safe Wild Photography.

References

1) Analysis of the Gimbals Platform for the Three Degrees of Freedom using Differential Equations: https://www.researchgate.net/publication/236849617_Analysis_of_the_Gimbals_Platform_for_the_Three_Degrees_of_Freedom_using_Differential_Equations

2) Practical applications for mobile robots based on Mecanum wheels - a systematic survey: https://www.researchgate.net/publication/233867057_Practical_applications_for_mobile_robots_based_on_Mecanum_wheels_-_a_systematic_survey

3) Practical applications for mobile robots based on Mecanum wheels - a systematic survey: https://www.researchgate.net/publication/233867057_Practical_applications_for_mobile_robots_based_on_Mecanum_wheels_-_a_systematic_survey

4) Book: industrial robotics by **Groover** Mikell

Thank You

Any Question?