ARLISS2009
Comeback Competition Report

TOHOKU University

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18.September.2009

September 2008

at Blackrock desert

Back ground

We are the champion!! (by Mr.Yusa)

Tohoku Univ. team won
the comeback competition 2008.

April 2009

at Sendai, Japan

Back ground

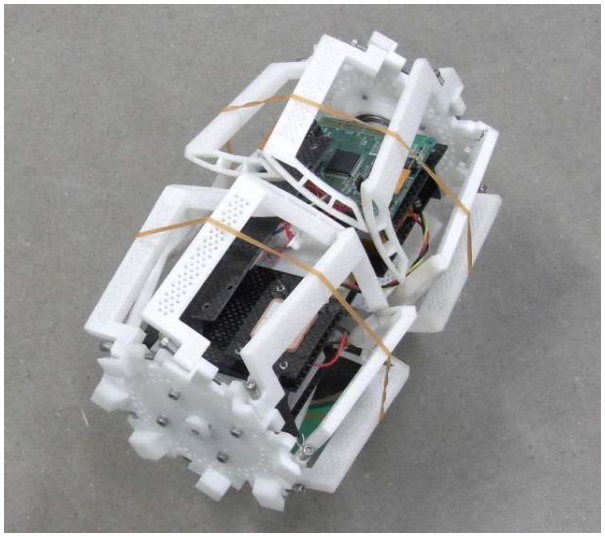
I don’t take you to the ARLISS 2009 without something new...
(Prof. Nagatani)

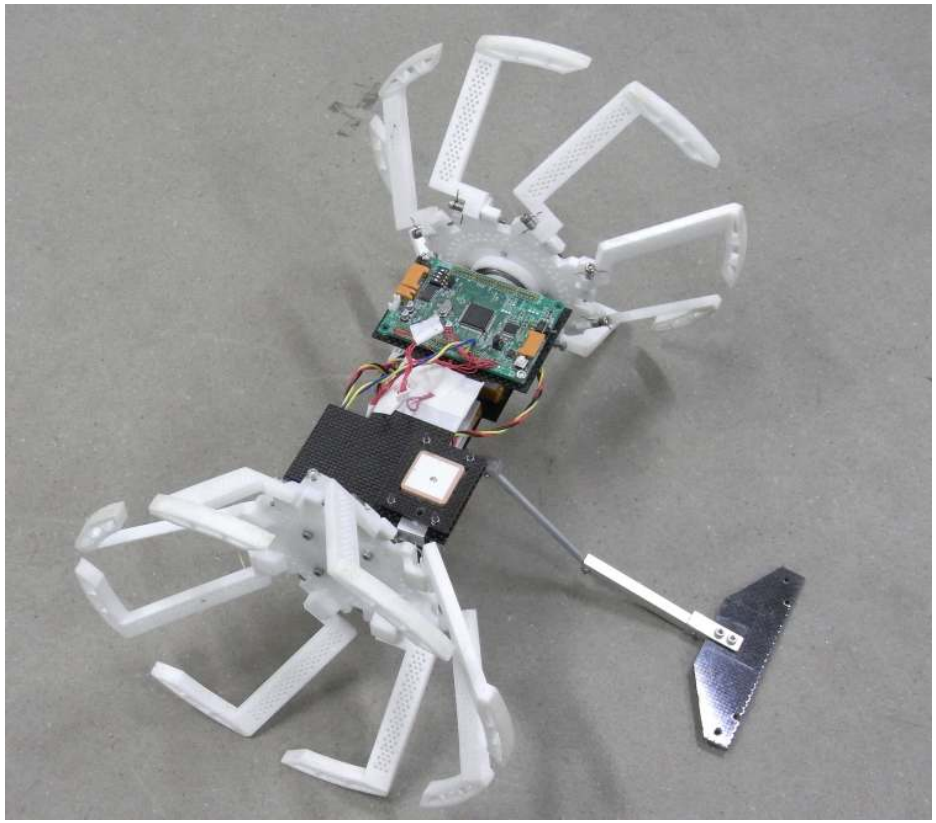
It is easy to run back if rover’s wheel diameter is much larger…

Back ground

① Size limit :
diameter ϕ150mm , length 240mm
② Large wheels for rough terrain
③ Something new

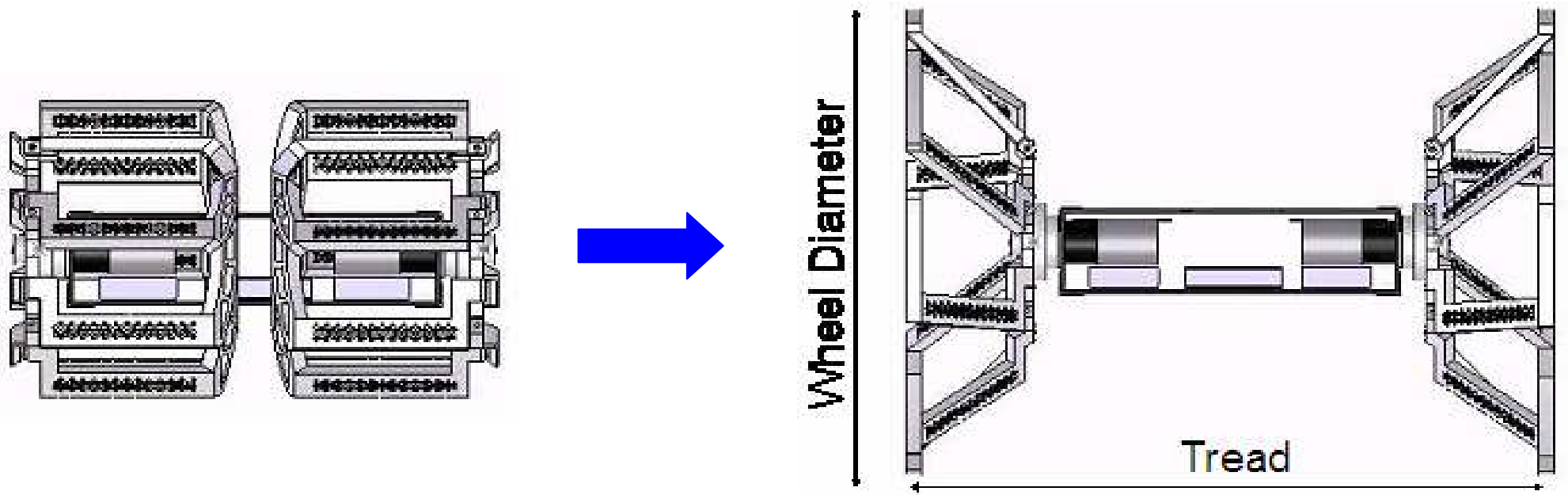
WindMill- I





- Wheel diameter: 150mm → 240mm
- Tread : 240mm → 300mm

WindMill- I



- Wheel diameter: 150mm → 240mm
- Tread : 240mm → 300mm

WindMill- I

Oh, MY GOD !!

Weight:
1150g ← 100g over

To cut down the weight:

- Electric circuit (and micro controller) is changed.
- Some metallic bolts are changed to plastic.
- Make holes in legs to reduce the weight.

24th August 2009

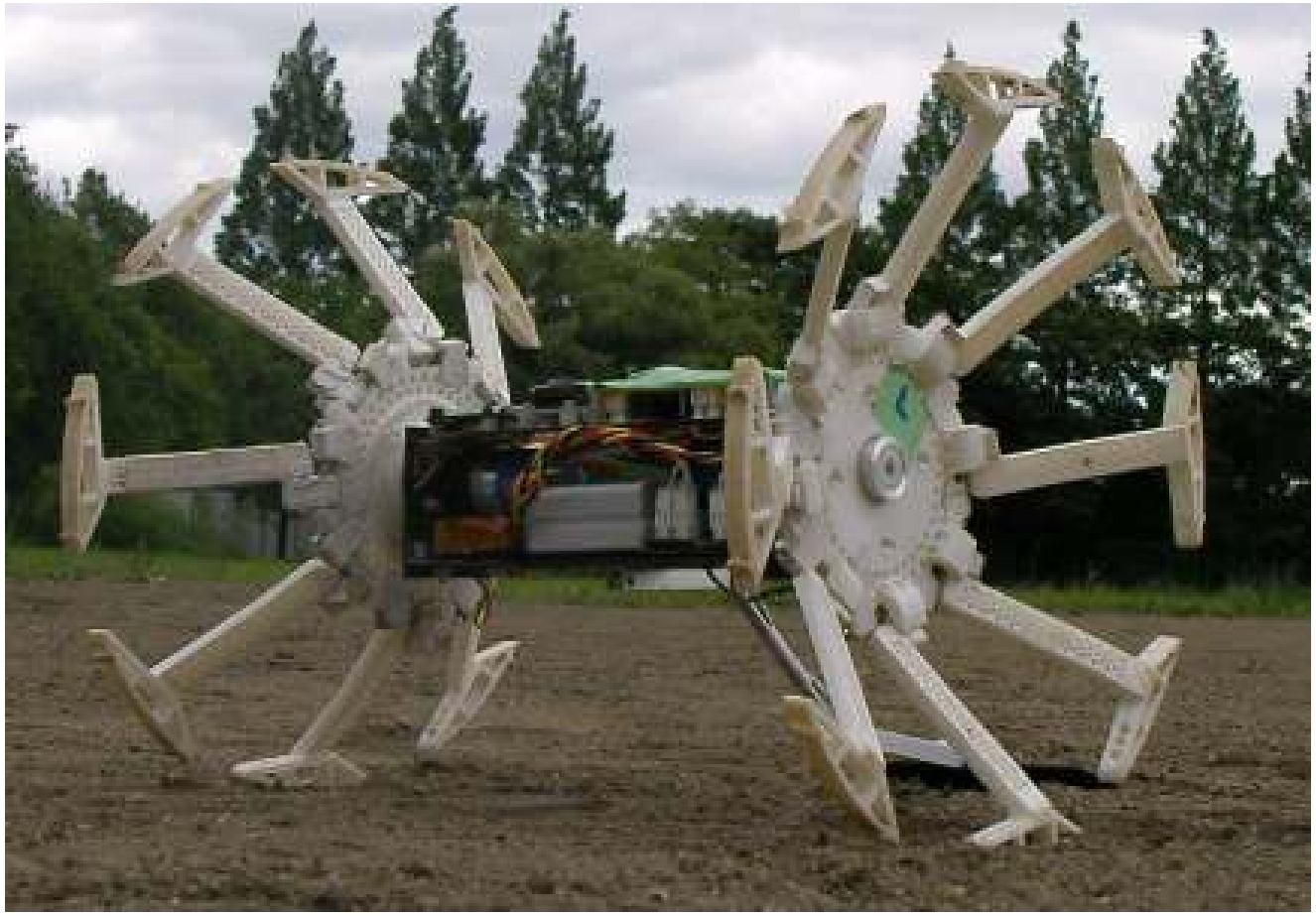
at Sendai, Japan

WindMill-Ⅱ

We developed new rover.

Total weight:1053g

Weight limit was cleared!!



Other stuffs : Beacon

We use XBee-pro as our rover's beacon.

Features:

- Linking with micro controller within 1 km via serial communication.
- Very useful to debug robot's program.
- Exchangeable from 'Low output' to 'High output'

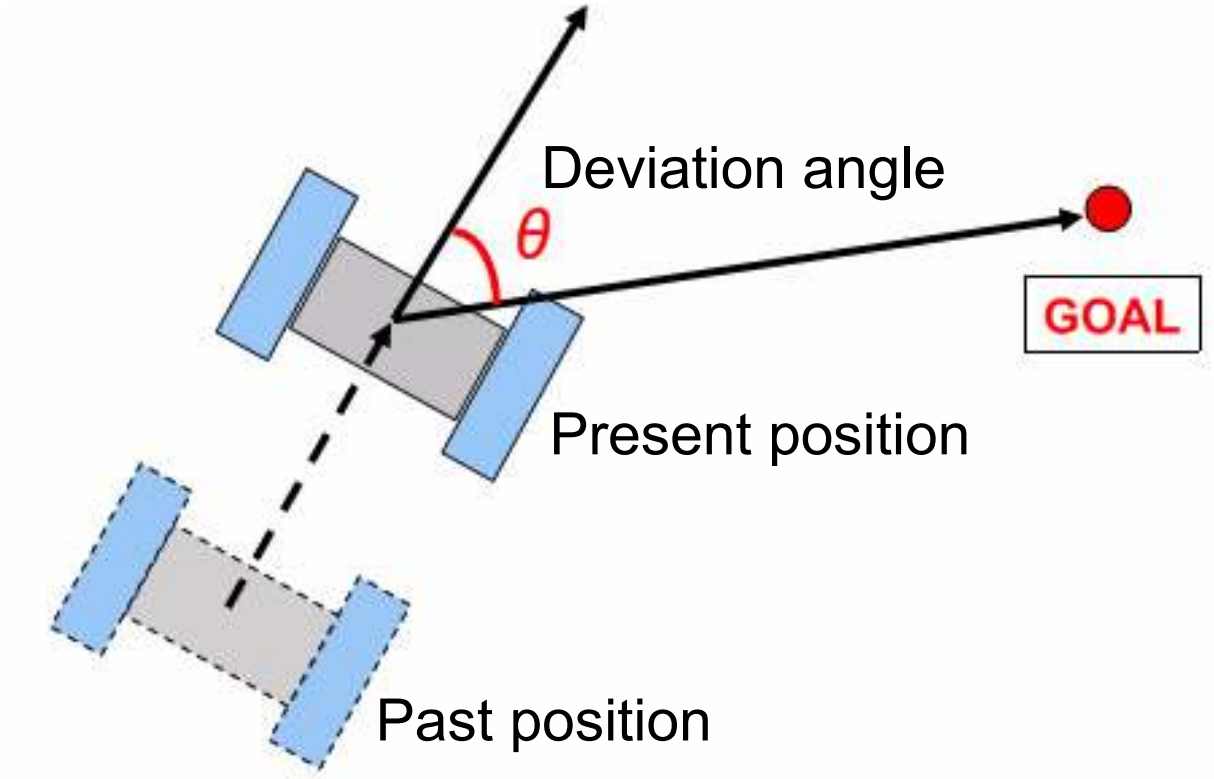
Low output (10mW)

High output (60mW)

Other stuffs : Navigation

GPS based Navigation

It’s the same strategy as the last year.



17th Sep. 2009

at Blackrock desert

The first flight

Thanks Mike for nice flight !

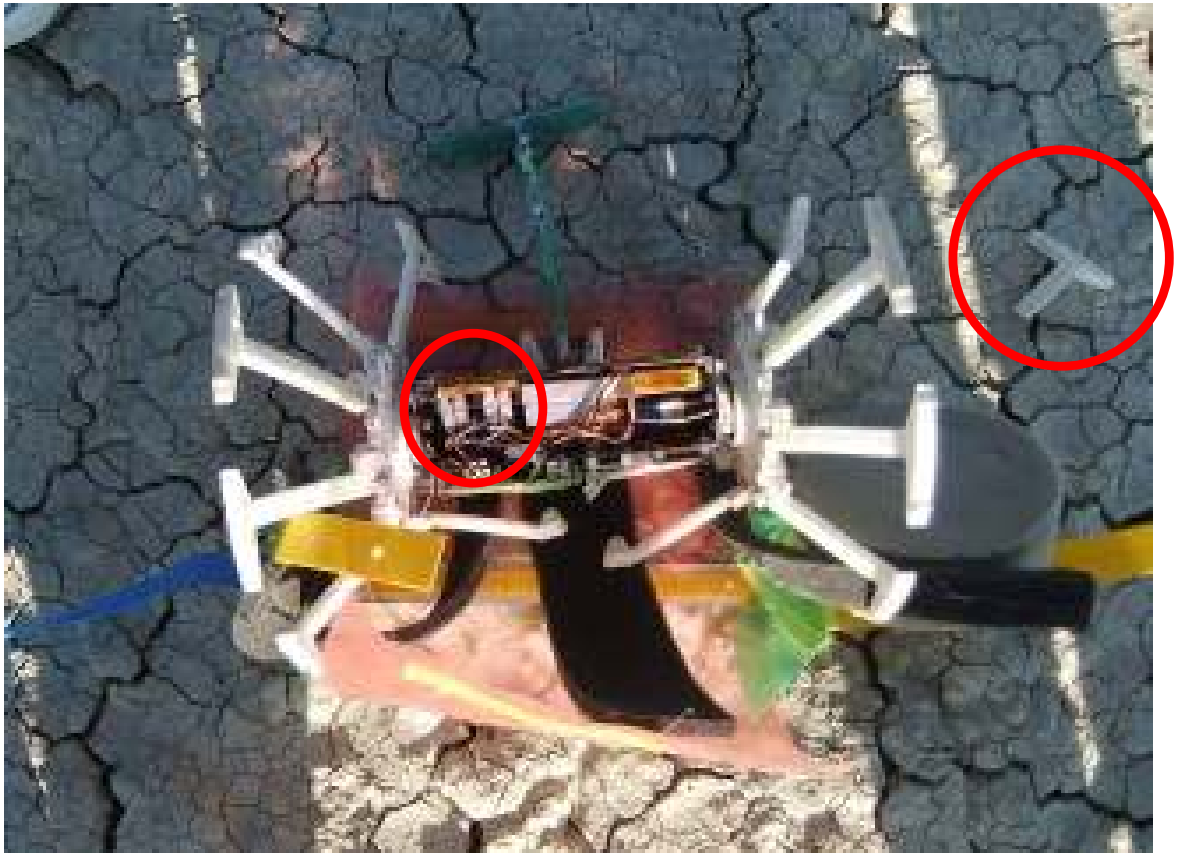
The first flight

Parachute separation were succeeded in.

But, the rover came back to the landing point..

The second flight

Thanks Richard for nice flight ! !



Navigation experiment

◎Long distance navigation

After ARLISS competition,
We challenged long distance navigation.

In every 200m, wheel's leg was broken.
At last, 4 legs were broken.

Navigation experiment

◎ Navigation on rough terrain

Conclusion and future works

We gat many experiences about Mechanical expandable wheel .

TOHOKU university will be back next year.
And,
We will win !!!!!!!!