

## HiWi – Bachelor - Master Thesis

### *Optimization of the heat flow in an energy autonomous wildlife tracker*

#### **Background:**

Wildlifetrackers are an essential tool to gather information about certain animals like the wolf or lynx. Attached to the desired animal, they monitor and gather information such as position and activity. The lifetime of the tracker is restricted by the included batteries which normally can't be exchanged during long term studies.

We aim to build a fully energy-autonomous tracker that solves this problem. Our approach harvests electric energy from the temperature-gradient between the mammal and environment while lowering power consumption of the components to the possible minimum.

A key component in such a system is the design of the harvester itself which has a high influence on the achievable output power and the potential impact on the animal itself.



#### **Tasks:**

In our team, you will focus on the description and improvement of the thermal connection to the animal - this includes:

- Design, investigation and simulation of possible attachments with respect to possible heat flux, output power, weight and impact on the animal
- Based on the result, prepare and carry out a field experiment to validate your expectations and gather data for further investigations.

With this work, you will contribute to our wildlife tracking system and you will gain various practical skills that are commonly needed in microsystems engineering. Experience in the design with Solid works/Autodesk and electronics is an advantage for fulfilling this task.

This position is available for one motivated bachelor/master student who starts as a HiWi and wants to do its master thesis on this. Interested students are welcome to contact us. More information about the tracker and the project can be found at [www.iottracker.de](http://www.iottracker.de).

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