



Short-term code development position: Bring ctmm to MoveApps

We are looking for an experienced R-programmer that can develop Apps for MoveApps using the ctmm (continuous-time movement modeling) R package.

[MoveApps](#) is an analysis platform for animal movement data, designed to facilitate easier collaboration and exchange between code developers and ecologists looking for flexible analytical tools. Users can analyze their data in workflows that they create by linking contributed Apps that execute R or Python code archived in git repositories.

[ctmm](#) is an R package for analyzing animal tracking data, using continuous-time stochastic process models. ctmm includes functionality for identifying, fitting, and applying stochastic process models to common movement analyses, including home-range estimation, speed and distance estimation, and habitat suitability modeling. The ctmmweb [RShiny graphical user interface](#) can also be used for this development, both in terms of its code and in terms of its workflow model.

This position will develop a sequence of Apps for MoveApps from ctmm code that can be combined into workflows that perform the following analysis steps:

- 1) Outlier detection
- 2) Visualize autocorrelation structure with variograms
- 3) Select autocorrelation models and report parameters
- 4) Leverage selected autocorrelation models for home-range estimation
- 5) Calculate home-range overlap
- 6) Calculate population-level home range estimates
- 7) Calculate occurrence distribution

These can all be found in the ctmmweb workflows and vignettes:

- ctmm.shinyapps.io/ctmmweb/
- ctmm-initiative.github.io/ctmm/articles/variogram.html
- ctmm-initiative.github.io/ctmm/articles/akde.html
- ctmm-initiative.github.io/ctmm/articles/error.html

Apart from the App development, IO types have to be defined and summarized. All Apps will be hosted open-source on Github and be integrated into MoveApps. Integrability with existing functionality of MoveApps is encouraged.

The assignment can be started anytime and must be finalized by 12 June 2023. The Apps have to be set up in collaboration with the MoveApps development team and under advice by the ctmm package developers. Payment is \$15,000 USD paid half at the midway point and half at the successful end of the project.

Work can be performed remotely or in collaboration with one of the institutes of the ctmm team (Christen Fleming–University of Maryland, USA or Justin Calabrese–Center for Advanced Systems Understanding, Görlitz, Germany) or one of the institutes of the MoveApps team (Roland Kays–North Carolina Museum of Natural Sciences, Raleigh, USA or Andrea Kölzsch–Max Planck Institute of Animal Behavior, Radolfzell, Germany). Contact us as soon as possible at info@moveapps.org.