

Foliage Camouflage System for ArmaII

FOLIAGE CAMOUFLAGE SYSTEM

Foliage Camouflage System (FolCamS) for ArmaII

The Foliage Camouflage System (FolCamS) is a 'logic' module that camouflages vehicles by attaching foliage to their hull and turret.

Simply add the module to your ArmaII mission, and supported vehicles will be camouflaged.



Illustration 1. Photo (L) and Arma2 screen shot (R) of camouflaged Leopard 2 (photo (c) Bundeswehr)

FolCamS recreates a WWII Wehrmacht and Cold War NATO practice in the ArmaII game series, camouflaging tanks, cars and artillery with leaves and twigs.

Supported Games, Modes, and Requirements

FolCamS works with latest versions of ArmaII, ArmaII:OA and ArmaII:CO. FolCamS works for single player and multi-player missions.

FolCamS solely requires the extended event handlers from CBA (CBA_XEH). CBA for your version of ArmaII is available from <http://www.armaholic.com/page.php?id=6231> as well as other Arma community sites.

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Vehicles covered

Out-of-the-box, FolCamS knows how to camouflage most vehicles from popular ArmaII WWII and Cold War mods, using a database of vehicle dimensions for 187 vehicles.



Illustration 2: CWR2's FV432 and British infantry advancing.

And for vehicles classes not yet supported, mission creators can simply add vehicle dimension data at mission start to have their mission's vehicles being camouflaged. That's also how I created all vehicle data for the vehicles now supported by FolCamS.

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What does FolCamS do?

FolCamS attaches foliage to the hull and to the rotating turret (memory points). It destroys the foliage when the vehicle becomes damaged.



Illustration 3: Camouflaged IF44 SS PaK engaging distant Shermans

FolCamS spawns a per-vehicle script to align the turret-foliage aligned with the rotating turret. (For foliage attached to a turret, ArmaII updates the position when the turret rotates, but fails to update the foliage's angle). This script updates less frequently the further the (nearest) players is away.

FolCamS understands how to camouflage a specific vehicle because it contains a database of vehicle dimensions. The benefit of this versus patching/overriding add-on configurations is that FolCamS has no hard dependencies on supported mods, and can be extended.

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Using the FolCamS modules

The simplest way to use the foliage camouflage system is to use the mission editor, and drop in a single module ('Foliage Camouflage: Conifer'). Once the mission starts, any vehicle known in the FolCamS database will be camouflaged with conifer foliage.

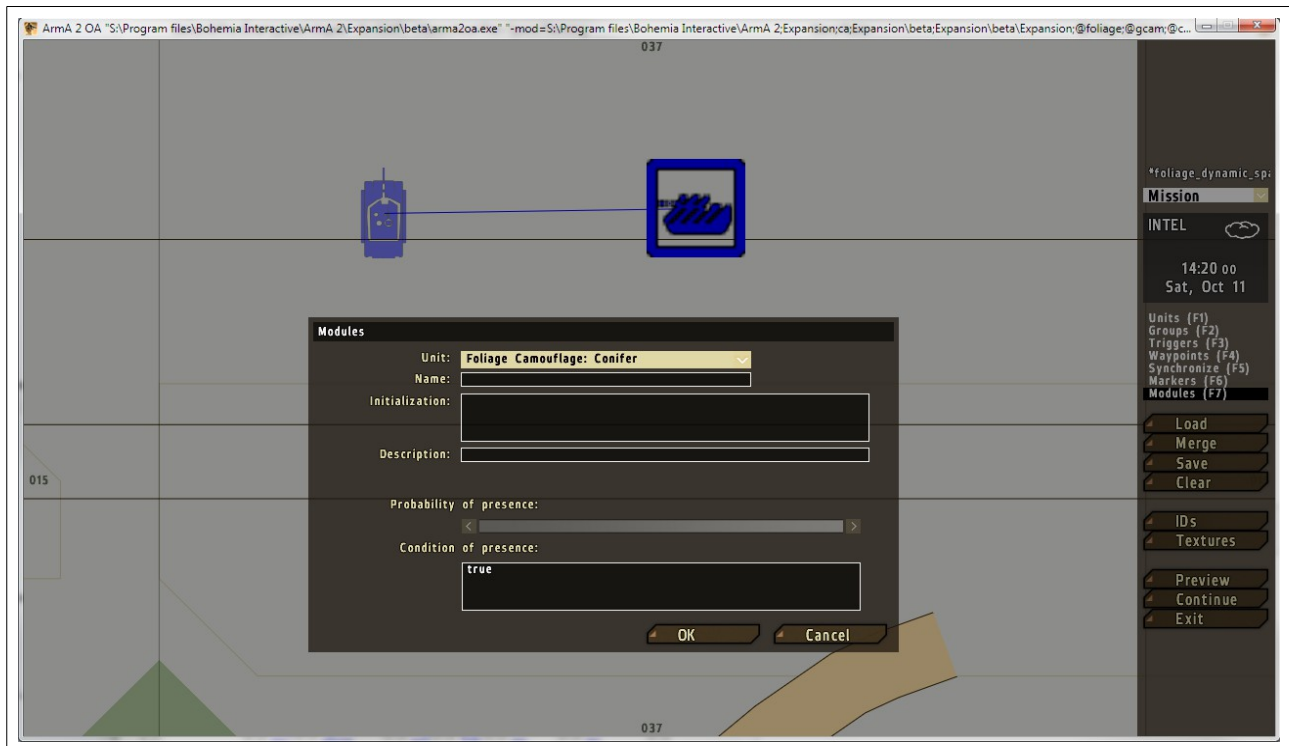


Illustration 4: In the editor: the Foliage Camouflage:Conifer module and one synchronized vehicle

Alternatively, you can control which vehicles receive foliage by synchronizing these vehicles with the module.

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Adding foliage to dynamically spawned vehicles

To add foliage to a dynamically spawned vehicle, you need to (1) make sure a Foliage Camouflage module is present in the mission, and (2) to execute a function call once the new vehicle has spawned.

```
// Wait for the foliage camouflage system (it should be up already)
waitUntil { sleep 0.1; !isnil("PLAN_foliage_camouflage_system") };

// Dynamically create a LAV25 near the player
private ["_vehicle"];
_vehicle = "LAV25" createVehicle (position player);

// Camouflage the vehicle using conifer foliage
[_vehicle, "Conifer"] call PLAN_foliage_camouflage_system_fnCamouflageVehicle;
```

Illustration 5: Code to attach specific foliage to a dynamically created vehicle



Illustration 6: Camouflaged cold war Bundeswehr Marder's near Schwemmlitz

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Enabling foliage camo for unsupported vehicles

To enable FolCamS to attach foliage to vehicles not known to it, you can extend the FolCamS vehicle database in the first moments of a mission, from the init.sqf script.

In the example below, the BundesWehr mod Leopard 2A6 (woodland) is added along with its dimensions.

In addition, the Leopard 2A6 (desert) is also added, using the woodland Leopard 2A6's dimensions, since it is a retextured variant of the former. So adding foliage to re-textured models is a piece of cake.

```
comment "From the mission's init.sqf, add/change the foliage camouflage system's vehicle data";
```

```
[] spawn {  
    comment "Wait for camouflage system to be initialized";  
    waitUntil { sleep 0.1; !isnil("PLAN_foliage_camouflage_databases") };
```

```
    ["BWMod_Leopard_2A6", [ ["length", 6.5],  
                            ["width", 3.2],  
                            ["forward_offset", 1.9],  
                            ["hull_height", 1.7],  
                            ["bumper_height", 0.9],  
                            ["turret_names", ["machine gun"]],  
                            ["turret_rotation", 270]  
                          ]
```

```
] call PLAN_foliage_camouflage_system_fnSetVehicleData;
```

```
comment "Also define the desert livery variant, using the woodland as an example";
```

```
['BWMod_Leopard_2A6_Desert',  
 'BWMod_Leopard_2A6', [ ]
```

```
] call PLAN_foliage_camouflage_system_fnSetVehicleDataUsingExample;
```

```
};
```

```
// other init.sqf statements
```

```
// ...
```

Illustration 7: Code in the mission's init.sqf to add/update vehicle data

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Vehicle dimensions used to attach foliage

The vehicle database uses the following dimensions and properties to attach foliage to a vehicle:

- length
- width
- forward_offset
- hull_height
- hull_length
- roof_height
- roof_length
- bumper_height
- side_offset
- turret_names
- turret_rotation

All distances are metric, and angles are degrees. All dimension names are lower case, and with underscores (_) connecting words.

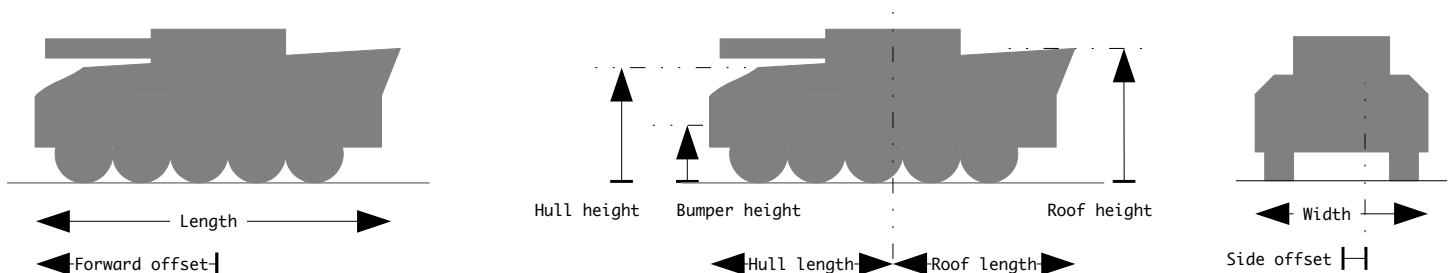


Illustration 8: Vehicle dimensions used to attach the foliage to a specific vehicle model

The dimensions 'roof_height', 'roof_length' are optional and required only when the vehicle's rear part of the hull has different height than the forward part of the hull.

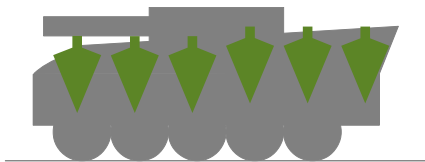
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The dimension 'bumper_height' is optional. No foliage will be attached to the front of the vehicle if no bumper height is given.

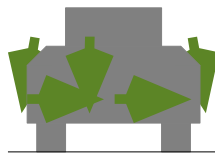
The dimension 'side_offset' is optional, and the side offset is 0 if not given.

The rotating memory points "turret_names" are issued as an array of strings. A horizontal rotation "turret_rotation" may be specified which is applied to all turret rotation.

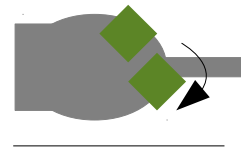
The foliage is applied as follows:



Side camouflage is hung from the hull's top, starting at the front.



Front camouflage is applied at the bumper position, and on the front hull, but not in front of the driver (if driver offset given).



Turret camouflage is placed at the named memory points, optionally with a rotation.

Illustration 9: Foliage attachment approach

To prevent vehicles from looking too similar, some of the side foliage is skipped at random, and side foliage is shifted and rotated slightly.

Classnames

Pho: plan_foliage_camouflage_system

Foliage module(s):

Conifer PLAN_FoliageCamouflageSystem_Conifer_Module

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Illustration 10: P85 Bradley M2A1 engaging from concealed position

Frequently Asked Questions

Q. How does FolCamS affect performance?

A. For single player mission, the added performance penalty is around a 1% drop in FPS per camouflaged vehicle traveling near the player and in his view.

On my system (Intel Q8400 and Nvidia GeForce GTX560Ti) performance dropped from a worst-case 34fps to a worst-case 27fps when adding camouflage to 20 nearby M1A2 parading in front of me.

I don't have good numbers for MP, where network traffic might increase due to the foliage 'vehicles' being moved.

Q. How do I get rid of the foliage attached to the turret, because it is blocking my gunners / commander's view?

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A. You can disable the turret foliage for a vehicle class by re-defining the 'turret_names' data by passing in an empty array of turret_names as follows:

```
comment "From the mission's init.sqf, add/change the foliage camouflage system's vehicle data";
[] spawn {
    comment "Wait for camouflage system to be initialized";
    waitUntil { sleep 0.1; !isnil("PLAN_foliage_camouflage_databases") };

    comment "Re-use the existing data definition for the M1A1, but reset the turret data";
    ['M1A1',
        'M1A1', [["turret_names", []]]
    ] call PLAN_foliage_camouflage_system_fnSetVehicleDataUsingExample;
}

] call PLAN_foliage_camouflage_system_fnSetVehicleDataUsingExample;
};

// other init.sqf statements
// ...
```

Illustration 11: Init.sqf code to remove turret foliage for a specific vehicle class

Q. How do I know which memory point to use for foliage that rotates with the turret?

A. It's varies per add-on, and it mostly trial and error, unless you happen to be an expert in reading vehicle configurations. I typically try the following memory points: "kulas", "OtocVez", "OtocVez_2", "OsaVelitele", "mainTurret", "kanon", "Turret_Main_MG", "OsaVeze", "Turret_Main_Spin", "hatch_commander".

I test by entering the vehicle as commander, switching to external view, then ordering the gunner to scan (3 - 7).

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Q. How is the AI affected by foliage added to vehicles?

A. The AI's ability to drive a camouflaged vehicle is not reduced, and neither is its ability to spot and shoot from a camouflaged vehicle. The AI's ability to spot another camouflaged vehicle is, in general, not reduced by foliage attached to that vehicle (because ArmaII handles concealment separately, via a vehicle's configuration).

I've tested this by observing a TOW / BMP-3 vehicle and having a 'hold fire' tank drive towards it. Tanks were engaged at the same distance (600m) regardless of camouflage.

In some cases (BI's T-72), the attached turret foliage seems to block a line-of-sight check for ArmaII's AI, and the AI becomes unable to spot the tank. Removing the turret foliage fixes the problem.

Q. I'm recording a movie using the FolCamS, but in my recorded footage I see the foliage stuttering when the turret is rotated.

A. By default, FolCamS solely uses smooth updates for vehicles close to the player. For far vehicles, foliage is moved as little as once per second. That might be causing the stuttering, and it also happened to me recording movies.

The good news is that you can override this behavior in the mission's init.sqf file, trading performance for better looking captured movies as follows:

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```
comment "From the mission's init.sqf, override the turret foliage period for better looking movies";  
[] spawn {  
    comment "Wait for the system to be initialized";  
    waitUntil { sleep 0.1; !isnil("PLAN_foliage_camouflage_databases") };  
  
    comment "Set the max update delay to 0.1s (instead of 1.0s)";  
    0.1 call PLAN_foliage_camouflage_system_fnSetMaxUpdateDelay;  
};  
  
// other init.sqf statements  
// ...
```

Illustration 12: Init.sqf code to override the max update delay to a small value, yielding smooth turret foliage movement even for far vehicles.



Illustration 13: White hot view of camouflaged FV432s and infantry

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Known issues

The attached foliage makes it more difficult to establish a lock-on with 'fire-and-forget' missiles such as the Javelin.

Change log

0.9 Initial released version



Illustration 14: FolCamS is set-up to handle various 'foliage' objects, even 'tyres'.

For FolCamS code, bug reports, updates...

For FolCamS code, bug reports, updates, please visit <https://dev-heaven.net/projects/folcams>. There you'll find the latest downloads, latest code, and lists of open and resolved bugs.

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Want to help improving FolCamS?

FolCamS can definitely be improved upon, especially in the following areas:

- Foliage model: the ideal model to use for camouflage would be a 1x1x0.2m box with two transparent foliage textures, and a LOD model that reduces to an opaque green triangle at distance. It would provide better camouflage and better frame rates than the currently employed pmugo.p3d (which is a BI shrub that is too large). FolCamS is already set-up to use different foliage models (see ill. 13); it's the model that is lacking.
- Adding/managing a vision block 'vehicle' to hide the vehicle from distant AI when static.
- Multi-player coding: testing and improving the FolCamS behavior, performance, and handling of respawning AI vehicles.
- Interactions: allowing the player to dynamically add or remove foliage with corresponding (internationalized) menu actions and animations
- Vehicle database: adding more vehicle dimension data for vehicles not yet supported.